

INDUSTRIAL SURVEY

of

The Resources

of the

Province of Manitoba

1947



Prepared for the

INDUSTRIAL DEVELOPMENT BOARD
OF MANITOBA

by

DONALD, ROSS & COMPANY

Montreal

F O R E W O R D

At the request of the Industrial Development Board of Manitoba, we have made an Industrial Survey of the Resources of Manitoba, looking towards the expansion of existing industries and the development of new industries - more particularly manufacturing industries - in the province.

Much assistance has been received from the Staff and Officers of the Industrial Development Board, and their facilities and the information they have compiled have made an important contribution to our work.

We are indebted to the many citizens of Manitoba who have so willingly and kindly assisted us; to officials of the Dominion and Provincial Governments and of Municipalities and Boards of Trade and to industrial executives who have supplied us with valuable information.

Much of our material has been obtained from Government publications and statistics.

We are very appreciative of the kindnesses and many courtesies received during the course of our work.

The findings of the Survey are presented in
four volumes as follows:

Volume I	Summary and Conclusions
Volume II	Geography and Topography Water Geology Soils Climate Population Labour Educational Facilities Transportation Communications Fuel Power Resources Markets
Volume III	Agriculture Mining Forestry Fisheries Furs (Trapping and Farming) and Game Construction Electric Power Custom and Repair Tourist Trade
Volume IV	Manufacturing Industries War Plants (Government-owned)

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Volume I

SUMMARY *and* CONCLUSIONS

of

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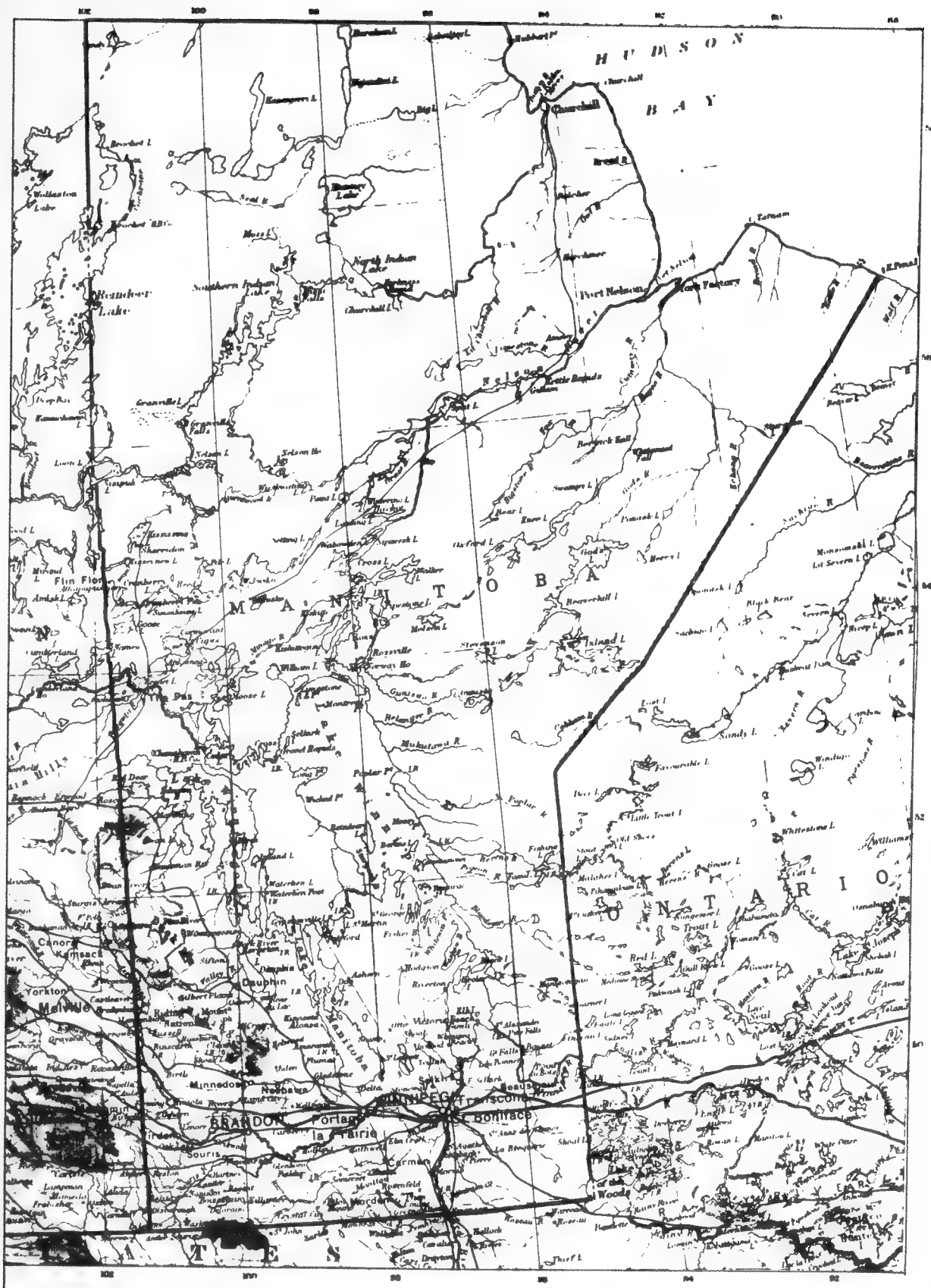
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VOLUME I

I N D E X

	<u>Page Nos.</u>
Foreword	A - B
Geography and Topography	1 - 2
Water	2 - 3
Geology	3
Soils	3 - 4
Climate	4
Population	5
Labour	5 - 6
Educational Facilities	6
Transportation	6 - 8
Communications	9 - 10
Fuel and Power	10 - 12
Markets	12 - 17
Agriculture	17 - 21
Mining Industry.	21 - 23
Forestry	24 - 26
Fisheries	26 - 27
Furs (Trapping and Farming) and Game	27 - 28
Tourist Trade	28
Construction	28
Manufacturing Industries	28 - 30
War Plants (Government Owned)	31
Conclusions	32 - 34

MAP OF MANITOBA



S U M M A R YGeography and Topography

The Province of Manitoba, the most easterly of Canada's three Prairie Provinces, has long been known as one of the great wheat-producing areas of the world. It is less generally recognized that Manitoba has developed a substantial manufacturing industry, largely based on her agricultural production, and also has an important and expanding mineral industry. The most centrally located of Canada's nine provinces, Manitoba is bounded on the south by the States of Minnesota and North Dakota, on the north and northeast by the Northwest Territories and Hudson Bay, and on the east and west by the Provinces of Ontario and Saskatchewan respectively. It includes an area of some 252,000 square miles with a population of about 730,000, or some 6% of the total population of Canada. Winnipeg, its capital, is the fourth largest city in Canada with a population of about 222,000. Manitoba is unique among the Prairie Provinces in having an ocean port at Churchill on Hudson Bay.

Of the total area of the province, much is a vast region of lakes and forests still largely inaccessible and uninhabited. The southern part of the province, with the exception of a small area contiguous to Ontario on the east, comprises prairie land, containing some of the finest wheat-growing lands in the world and producing a wide range of agricultural products which are the backbone of the economy of Manitoba. To the north and northeast of the prairie land lies the lake and forest country. Unsuitable for agriculture, this area is a source of fish, game and furs, supports a large pulp and paper industry and provides reserves of timber. Much of the area is

underlain by the Pre-Cambrian formations, which are the source of the important mineral industries of the province and from which new mineral industries can be anticipated as prospecting progresses. Notable topographical features are the lakes immediately north and east of the prairie land which, in area, are amongst the largest of Canada's great inland bodies of water. These lakes form a great basin and are fed by the rivers crossing the prairies and also by the watershed to the east of Manitoba. These rivers, together with the rivers flowing out of these lakes and draining to Hudson Bay, are the source of the important hydro-electric developments in the province and of the large water power resources yet to be developed.

Water

The river systems of the Saskatchewan, the Assiniboine, the Red and the Winnipeg comprise a net-work of lakes and streams covering much of the agricultural area of the province. The water of the Winnipeg River is soft and of a high quality. The Prairie rivers, on the other hand, are hard and have a high solid content, reflecting the drainage of the Prairie basin. Well water is found extensively throughout the province, and artesian wells at one time supplied the requirements of the City of Winnipeg. Some well waters, however, are saline.

The Greater Winnipeg area is served with an unusually good water supply carried by an aqueduct from Shoal Lake some 90 miles southeast of Winnipeg. The source at Shoal Lake greatly exceeds any possible requirements, and the potential capacity of the aqueduct is some 85,000,000 gallons per day, as against the present average consumption of some 16,300,000 gallons per day with present maximum requirements of 22,800,000 gallons

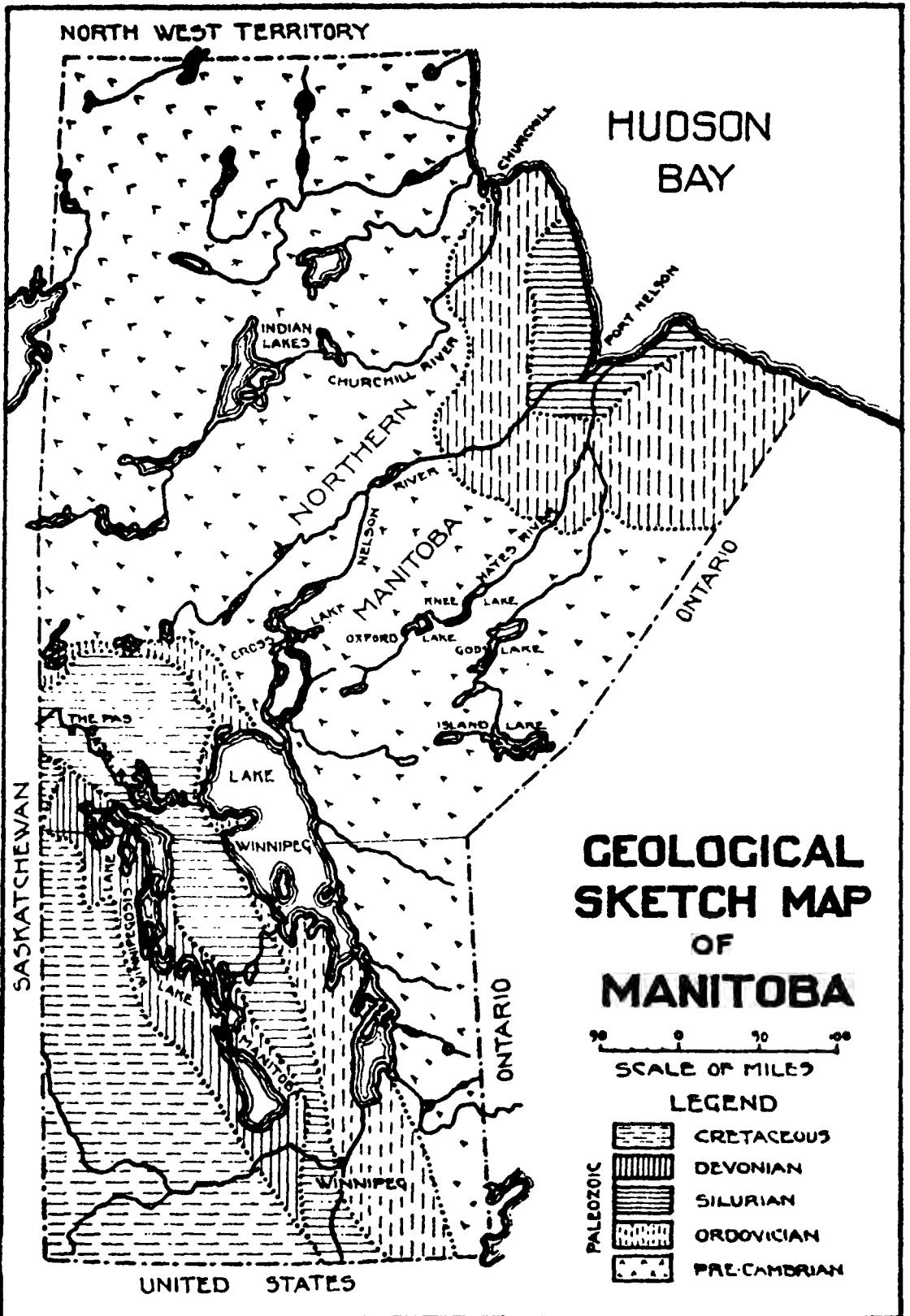
per day. There is thus available in the Greater Winnipeg area an abundant source of water for future expansion.

Geology

Geologically, Manitoba can be divided into the three main areas representing the Pre-Cambrian, Palaeozoic and Mesozoic periods. The general outline of these areas is shown on the geological map attached herewith. Pre-Cambrian formations underlie some three-fifths of the area of the province. The Palaeozoic and Mesozoic formations largely underlie the southern and agricultural portion of the province. In the Pre-Cambrian rocks are found the metalliferous deposits which are the source of the metal industries of Manitoba. From the Palaeozoic formations are obtained the shales, limestones, gypsum, dolomites and brines which are of considerable economic importance. With the exception of bentonite, the Mesozoic deposits have not yielded minerals of economic value. In the extreme southwestern part of the province beds of lignite occur but are not important commercially.

Soils

The main agricultural areas are founded upon the rich, black soils for which the province is noted. These soils, which had their origin in the glacial lakes at one time covering much of the southern and western parts of the province, are amongst the most fertile in Canada. They are excellent soils for most purposes, but are especially suitable for the production of grain, particularly wheat. The soils of the northern portions of the province are not, in the main, particularly suitable for agriculture, consisting principally of acid woodland soils, although, undoubtedly, areas adaptable to agriculture production exist. The total



acreage under cultivation constitutes about one-twentieth of the total land area of the province and about one-third of the organized area. While limited areas of agricultural soil still remain to be settled, the majority of the better soils are already devoted to agriculture.

Climate

The climate of Manitoba, like that of all inland continental areas, is subject to fairly wide seasonal variations, and there is also a wide variation between the north and south of the province. Dealing more particularly with the southern and agricultural areas, the summers are warm with cool nights and the frost-free growing season is some 100 - 115 days varying with location and altitude. This provides excellent growing weather for grain and most vegetables. Annual precipitation, including rain and snow, varies with the locality from about 16 inches to 21 inches, but the maximum period of precipitation coincides with the growing season, an important factor in agriculture. In common with the western prairie lands of both Canada and the United States, Manitoba has at times suffered from drought, but the dry periods have been less severe than in the other prairie areas. Generally speaking, the winters are long, but the low humidity tends to offset the cold and provide an invigorating climate. The severity of the winter prevents the successful cultivation of most fruit trees, but small fruits thrive. The climate of the northern part of the province is modified by the large inland lakes and, in the far north, by Hudson Bay. While the winter in these northern regions is relatively severe, the establishment of a large and thriving copper-zinc industry at Flin Flon indicates that the winter is no barrier to successful industrial operations

Population

Manitoba's population of some 730,000 persons comprises 30% of the population of the three Prairie Provinces and some 6% of the population of the Dominion. Of these, some 408,000 are classified as rural and some 322,000 as urban. The greater part of the urban population, or about 290,000, is concentrated in the Greater Winnipeg area. Of the total population of Manitoba, some 536,000 are of Canadian birth. Racial origins are many, with some 360,000 of British descent. The remaining 340,000 reflect the large influx of continental Europeans in the period of rapid growth from 1900 to 1921. In order of size, the major groups of non-British origin are Ukrainians, French, German, Dutch, Polish and Scandinavian. As might be anticipated, a wide range of skills and cultures are to be found which are reflected in both the industrial and social life of the province.

Labour

Greater Winnipeg, comprising some 40% of the population of the province and including a major portion of its industry, provides the largest market for labour and the largest pool of labour. Of the 265,537 persons gainfully employed in Manitoba in 1941, agriculture employed about 35%, manufacturing 13%, transportation and communication 8%, trade, wholesale and retail 13%, and professional and service industries 19%. The labour market fluctuates with the prosperity of agricultural industry. In general, however, Manitoba labour, skilled and unskilled, is stable and efficient. Labour rates are, on the whole, somewhat lower than in Eastern Canada. In the main, however, labour laws and rates compare favourably with the rest of Canada. It is significant that a war-time explosive plant located in the Greater Winnipeg area

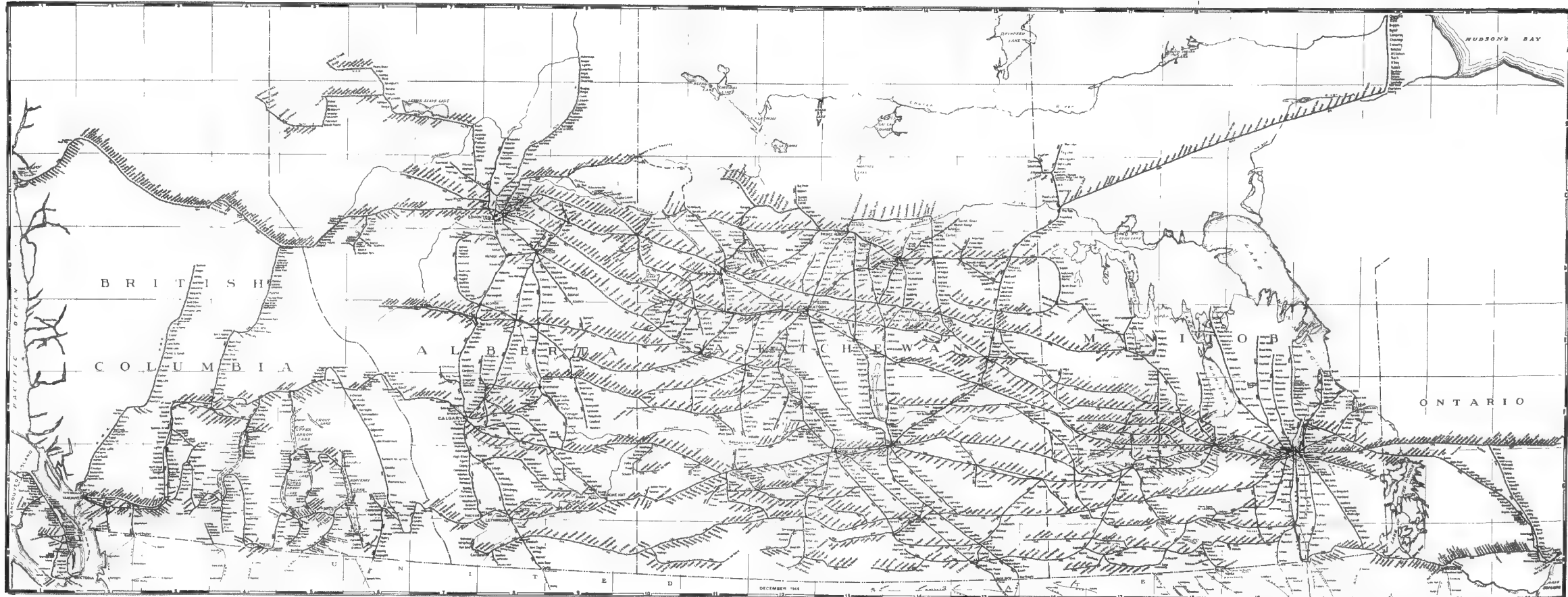
and utilising almost exclusively local labour compared favourably in efficiency with similar plants in Eastern Canada, although it was an entirely new type of industry to the province.

Educational Facilities

Manitoba's educational system compares favourably with those of other provinces, and total enrolment in schools and colleges is in about the same proportion as that of the rest of Canada. Elementary and secondary schools are under the jurisdiction of the Provincial Department of Education. The University of Manitoba, with its associated institutions, provides university training in Arts, Science, Agriculture, Engineering, Architecture, Medicine and Education as well as in several other courses. Enrolment for the 1945 - 46 session in the regular university courses amounted to some 5,545, with an additional 3,000 in Extension and Summer School courses. As in other Canadian universities, current enrolment has been greatly increased by returning veterans. In general, Manitoba's education is of a high standard and its importance recognized in the community.

Transportation

Transportation plays an unusually important part in the economic and industrial life of the province. The railway system has been largely developed to move Manitoba's agricultural products to Eastern Canadian and European markets. The two Canadian trans-continental railway systems, the Canadian National Railways and the Canadian Pacific Railway Company, traverse the province, and branch lines reaching out from Winnipeg, Portage, Brandon and Dauphin serve the southern and settled portions of the province. An extensive system of highways and roads supplements the rail facilities. As will be seen by reference to the attached railway and road maps, the settled portions of the



MANITOBA ROAD MAP
FOLLOWING

province have excellent transportation facilities, and few areas are more than 10 to 15 miles from a railway line. The Hudson Bay Railway line, crossing the northern part of the province, has its terminus at the port of Churchill on Hudson Bay. The railway was built to provide an alternative and shorter route for the transportation of grain to Europe but, to date, only a comparatively small quantity has been shipped by this route. It is, however, serving an important and expanding mining industry in Northern Manitoba. Both the Canadian National Railways and Canadian Pacific Railway Company have connections south of Winnipeg with the United States railway systems. The Midland Railway, a subsidiary of the United States Northern Pacific and Great Northern Railway Companies, operates over the Canadian National Railways main line between the international boundary and Winnipeg. The highways of Manitoba also connect with the highway systems of the United States to the south.

The total single track rail mileage within the province is some 4,840 miles. There are approximately 9,000 miles of surfaced roads and some 8,000 miles of improved earth roads. The railway rate structure has, in general, been designed to promote the interest of the primary producer. Rail rates are subject to the jurisdiction of the Board of Railway Commissioners of Canada.

Air transportation of rapidly increasing importance has made readily accessible much of the unsettled northern area which formerly could only be reached by slow and tedious journey.

The role of transportation in Manitoba, is greatly enhanced by the importance of Winnipeg as one of the great transportation centres of Canada. As will be seen by reference to the railway map, Canadian transcontinental rail traffic is forced to converge on Winnipeg by the natural barriers formed by the lakes to the north and the Lake of the

Woods and the United States Border to the south. As a result, all rail traffic between Eastern and Western Canada passes through Winnipeg. To adequately handle this large volume of freight, both transcontinental railways have established extensive yards, shops and subsidiary services and have made Winnipeg their Western headquarters. In 1944 it was estimated, that in Winnipeg some 16,000 persons were directly employed by the railways (including shops) or some 20% of those gainfully employed. According to the 1941 census total employment in all types of transportation in the province totalled about 25,000 (including shops). In addition, considerable employment arises from industries supplying the requirements of the transportation industry.

In the important field of air transport, the geographical advantages of Winnipeg and its industrial importance have lead to the establishment there of operational headquarters of Trans-Canada Air Lines, the only Canadian transcontinental air transport system. Winnipeg is the operational and traffic headquarters for Canadian Pacific Air Lines and also a Canadian terminal for Northwest Air Lines. Stevenson Airport, on the outskirts of Winnipeg, is a fully equipped airport, and Trans-Canada Air Lines have created there the most complete aircraft engineering and maintenance establishments in Canada. In 1943 Manitoba was the second largest contributor of freight in civilian air traffic in Canada. The future of Winnipeg as an air transport centre of great importance seems assured.

The leading role played by transportation in the industrial life of the province is evident. While transportation activity will fluctuate with the total industrial activity, it seems apparent that, due to the peculiarly strategic position of Winnipeg, transportation in its various phases will continue as one of the main industrial activities of the province.

Communications

Manitoba's communication systems - postal, telegraph and telephone - are of a high standard and compare favourably with those in the rest of Canada.

The postal system comprises some 800 post offices. Postal revenues in 1942 amounted to some \$5,800,000, with the Greater Winnipeg area contributing some 75% of the total. The more recent improvements in air transport have brought Winnipeg within twenty-four hours' postal time of most of the important centres of North America and within forty-eight hours of the United Kingdom. Air transport has also made possible rapid communication with the outlying portions of the province and this is proving an important factor in developing the northern areas.

Telegraph service is supplied by the Canadian National Telegraphs, a subsidiary of the Canadian National Railways, and the Canadian Pacific Telegraphs, a subsidiary of the Canadian Pacific Railway Company. There are 334 telegraph offices within the province, or about 8% of the total for Canada.

The Manitoba telephone system is owned and operated by the province, and in 1943, there were some 92,000 telephones in Manitoba, or some 12.7 per 100 of the population. About 68% of the telephones were in the Greater Winnipeg area. With the exception of Ontario and British Columbia there are more telephones per unit of population than in the other Canadian provinces.

Radio has greatly improved communication with the more remote districts of the province. In addition to the usual broadcasting stations, both the Provincial and Federal Governments maintain a number of radio communication stations. There is now a total of 128 broadcasting and radio communication stations in the province, of which 43 are operated by the Federal or Provincial Government and 85 by private industry. Private

receiving sets in 1944 were estimated at 6.6 persons per set as against the total for Canada of 6.8 persons per set.

Fuel and Power

Manitoba is richly endowed with water power and well supplied with hydro-electric energy, although largely deficient in sources of fuel. Apart from wood, an important source of domestic fuel, particularly in rural areas, fuel supplies are imported. In contrast to Saskatchewan and Alberta, no important coal deposits are known, and neither oil nor natural gas has been discovered in commercial quantities. Fortunately, the provinces to the west, Saskatchewan, Alberta and British Columbia, are large producers of coal and adequately supply most of Manitoba's requirements. The quality of coal available varies from the lignites of Saskatchewan to the bituminous and semi-bituminous coals of Alberta and Eastern British Columbia. Some 50% of the fuel requirements of Manitoba are supplied by the lignites of Saskatchewan, which provide a relatively low cost fuel. A small quantity of anthracite is imported from the United States. Fuel oils processed locally are dependent upon imported crude oils. Coal gas manufacturing plants provide coal gas for domestic purposes in Winnipeg and Brandon and for limited industrial purposes in Winnipeg.

The increased use of butane and propane in gas distributing systems and in cylinders may further improve the domestic fuel situation. Both are available in Alberta but are not presently recovered. There is also the possibility, if not the probability, that the large reserves of natural gas in Alberta may eventually lead to transmission of natural gas to the larger urban areas of Manitoba.

The availability of cheap hydro-electric power and the large

water power resources yet to be developed are among the chief assets of the province. The installed capacity of hydro-electric plants, as of 1945, was some 421,000 horse-power with an eventual capacity of 600,000 horse-power. It is expected that a further 24,000 h.p. will be installed in 1946. With the exception of a small development of 1,900 h.p. in Northern Manitoba, these plants are located on the Winnipeg River and so situated as to conveniently serve the Greater Winnipeg area. The power presently generated, however, represents only a small portion of the potential developments estimated at an additional 4,000,000 h.p. and constituting some 16% of the undeveloped water power resources of Canada. The larger part of this undeveloped power is on the rivers flowing into Hudson Bay. In addition to the power generated within the province, a development of 90,000 h.p. at Island Falls, Saskatchewan, close to the Manitoba border, supplies the important mining industries of the north at Flin Flon and Sherridon.

All water power resources are owned by the province and are leased subject to reasonable restrictions and suitable arrangements. With the exception of the small plant already referred to, the present hydro-electric developments are controlled either by the Winnipeg Electric Company, a privately owned corporation, or the City of Winnipeg Hydro-Electric System, a publicly owned corporation. Their respective installed capacities, as of 1945, were 265,800 and 153,000 h.p. The Winnipeg Electric Company also distributes power to mining and pulp and paper corporations east of Winnipeg as far as Kenora in Ontario. The Manitoba Power Commission, a publicly owned corporation, purchases power from the Winnipeg Electric Company and supplies rural and municipal requirements mainly west, north and south of Winnipeg. At the present time an extensive rural

electrification programme is being undertaken through the Manitoba Power Commission.

Of the total power sold in the province in 1941, some 75% was used by industry and some 19% for domestic and residential requirements. The major users of industrial power were the mining and pulp and paper industries using, respectively, 32.3% and 28.5%.

The power resources of Manitoba are such that ample supplies of power can be envisaged for future industrial developments for a long time to come, and these resources should eventually form the basis for large chemical and metallurgical industries.

Markets

Manitoba is dependent upon export markets for most of her primary production and much of her manufacturing industry. As will be seen by referring to the tables in pages 59 and 60 of Volume II, agriculture, mining, pulp and paper and the manufacturing industries dependent upon agriculture represented some 70% of the total production of the province in 1939. Agriculture made up some 45% of the total net production; and the manufacturing industries dependent upon agriculture represented some 60% of the total production of the manufacturing industries. The prosperity of the province as a whole is thus largely dependent upon agricultural production and export markets for these products.

A large part of the agricultural production is exported to Europe and, consequently, the European demand for grain, chiefly wheat and animal products, largely determines the market for these products in Manitoba. In these markets Manitoba must meet competition from other countries exporting agricultural products. During the war years and since, increased demands, higher prices and good crops resulted in a large expansion in the value of Manitoba's agricultural production and exports.

Future demands will be dependent upon world conditions, The more recent trade agreements between Canada and the United Kingdom are aimed at stabilizing the export market for Canadian agricultural products. Recent proposals of the Food and Agriculture Organization of the United Nations Organization also have as their objective the stabilization of markets for world agricultural production. Manitoba would obviously profit by any such stabilization of agricultural markets.

The export markets in the United States for Manitoba's agricultural products have, in the past, been limited by trade restrictions. There seems to be little reason at the present time to assume that the post-war positions will be changed.

The possibility of enlarging Canadian export trade to the Orient has been receiving attention. It appears improbable, however, that exports to the Orient will appreciably enlarge existing markets in the near future.

The mining industry of Manitoba, which in importance is only exceeded by agriculture and its subsidiary milling and packing-house industries, is almost entirely dependent upon world export markets. Much of this production chiefly copper and zinc, is marketed in Europe. The high quality of the products and the efficiency of these operations would seem to assure a steady export market for this production.

The products of the pulp and paper industry are largely exported to the United States. An expanding export market seems assured for some time to come.

Domestic Markets

The domestic markets available to Manitoba production can be roughly divided into: (i) The Western Canadian Market; (ii) The Eastern Canadian Market. In addition there lies to the immediate south of Manitoba a large United States market which, owing to its proximity can

be most suitably discussed under this heading.

(1) Western Canadian Market:

The Western Canadian market is the natural outlet for Manitoba's industrial production. It comprises the territory from the Great Lakes to the Rocky Mountains and includes the Provinces of Alberta and Saskatchewan to the west and Ontario west of Port Arthur. The distance from Port Arthur to the western border of Alberta is about 1,300 miles; the distance from Winnipeg to Calgary and Edmonton is some 800 miles; the distance from Winnipeg to Port Arthur is approximately 420 miles. As will be seen by reference to the map the depth of this market, north and south, is comparatively narrow. In this western market, freight rates are of unusual importance, and Manitoba's industry has a transportation advantage over Eastern Canadian industry. This advantage decreases towards the western limits of the market. The population of this area is about 2,500,000, or 21% of Canada. Some 60% of the market is a rural market. Manitoba alone has a population of some 730,000, with about 300,000 concentrated in the Greater Winnipeg area. The most favourable market area is, obviously, the Manitoba market itself and the markets in Saskatchewan and Ontario to the immediate west and east.

The industrial development of Manitoba exceeds that of the other Prairie Provinces, and the largest concentration of industry lies in the Greater Winnipeg area. The strategic geographic position of Winnipeg and its importance as a transportation centre have made it the main distributing centre in Western Canada, and Winnipeg has evolved into a manufacturing centre. Major manufacturing industries in the Winnipeg area are the milling and packing-house industries, both largely dependent upon export markets. In addition, however, a large and varied industry has been built up supplying the needs of these industries as well as those of the transportation, construction, mining and pulp and paper industries and the

consumer demand in general. Due to this industrial development also supplying the western market as a whole, the domestic market in Manitoba is less dependent upon agriculture than the other Prairie Provinces and is relatively more stable. This is further assisted by the mining and pulp and paper industries of Manitoba which are independent of agriculture and of the markets for agricultural production. The manufacturing industries of Manitoba thus have the most stable domestic market in Western Canada, with a large part of that market concentrated in the Greater Winnipeg area. Therefore, industries which supply the western market have a decided advantage if they establish in Manitoba; and the advantages of Greater Winnipeg as an industrial centre are well illustrated by the fact that it is the fourth largest retail sales centre in Canada, only being exceeded by Montreal, Toronto and Vancouver.

(ii) Eastern Canadian Market:

The Eastern Canadian market, by which is implied the market from Port Arthur eastward, is the largest domestic market in Canada and comprises a population of about 8,300,000, with some 7,100,000 in the provinces of Ontario and Quebec. The densest portion of this large market, which includes Ontario and Quebec, is some 1,200 miles from Winnipeg. Transportation thus represents an important factor in competing with local industry in this market and Manitoba production to compete must have, therefore, some advantage, such as lower cost or, alternatively, comprise products of relatively high cost, thus minimizing the transportation charges. In the first category are primary products, such as wheat, animal products, metals, etc., for which, however, the eastern market is relatively small in comparison with the exports from Manitoba and the other Western Provinces. In the second category are

manufactured products which can be divided into two classes -

- (1) Manufactured products based on raw materials produced in Manitoba
- (2) Consumer goods not necessarily dependent upon Manitoba raw materials.

(1) Manufacture of products marketable in Eastern Canada, using Manitoba raw materials is susceptible of further development. An example of a successful operation of this type is the tanning of hides in Manitoba and shipment of the products to the Eastern Canadian market. The large volume in this market offers opportunity for further developments of this type.

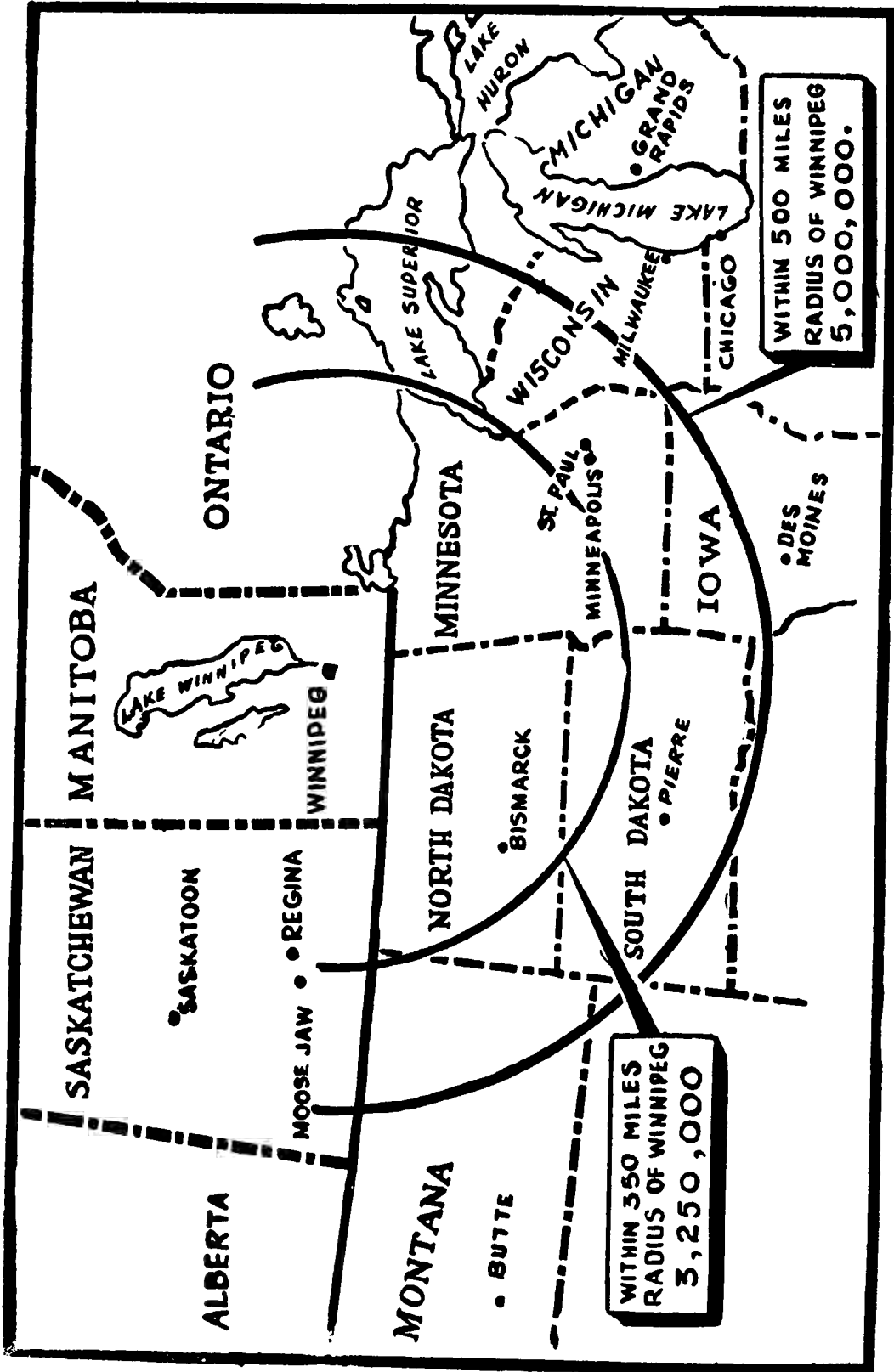
(2) In the second category are largely consumer goods, such as clothing, electrical appliances, etc., for which a substantial market already exists in Western Canada. Manitoba industry in this field should find expansion into the large eastern market both possible and profitable.

(iii) United States Market to the South:

The Western Canadian market with a population of some 2,500,000 is stretched over a distance of some 1,200 miles. In the United States, immediately to the south and within a shorter distance, lies a much larger potential market. This market area is shown on the accompanying map. The distances of the two areas shown and the approximate population in each are as follows:

Within 350 miles radius of Winnipeg	3,250,000
Within 500 " " " "	5,000,000

There is thus within a reasonable reach of Winnipeg a large market with approximately the same type of consumer demand as exists in the Canadian market, but access to which is limited by trade restrictions. Consumer industries supplying luxury demands should, however, be able to expand into this market. Obviously any easing of trade restrictions would greatly enlarge the markets available to Manitoba.



MAP OF MARKET AREA

Purchasing Power

The purchasing power in the Western Canadian market reflects the prosperity of agriculture and, therefore, fluctuates with the agricultural yield and export demand. The consumer demand in Manitoba is more stable than in the other Prairie Provinces for reasons already outlined. In general, however, the purchasing power in Manitoba is not greatly different from Canada as a whole, and purchasing habits do not differ materially from the rest of Canada.

Any substantial and permanent increase of purchasing power is dependent upon increased population and increased industrialization. For the past decade the population of the three Prairie Provinces has been practically static. Any marked increase will be dependent upon resumption of immigration.

A strong movement persists throughout Western Canada for increased industrialization to render the economy less dependent upon agriculture. Manitoba is advantageously situated for such expansion. It is significant that mining with all its economic potentialities - an industry unrelated to agriculture - is a leading industry in the province and that the pulp and paper industry is also well established.

A substantial expansion in industries supplying the consumer demand seems probable. It is not unreasonable, therefore, to assume that Manitoba can anticipate increased industrialization and, consequently, a more stable domestic market.

Agriculture

Agriculture is the dominating factor in the economic life of the province. Its importance is well illustrated by the fact that, in 1941, the gross value of farm production totalled some \$125,714,000 out of a total gross production for the province of some \$414,913,000,

or some 30%. In addition, a large percentage of the production value of Manitoba's manufacturing industries - about 60% - are based on agricultural products.

The foundation of Manitoba's agricultural wealth rests in the black soils found in the southern or prairie parts of the province, which are justly famed for their fertility and include some of the finest grain-growing land in the world. The total land under cultivation amounts to about 7,500,000 acres, representing about one-third of the settled portion of the province and one-twentieth of its total area. In 1941 there were some 58,000 farms with an average acreage of 291 supporting a farm population of some 250,000, or about 30% of the population of the province.

Gross farm production for the year 1941 was divided as follows:

Gross Value of Agricultural Production in Manitoba

1941

	<u>\$:000</u>
Field Crops	\$ 74,458
Farm Animals	23,878
Wool	186
Dairy Production	15,857
Garden Products	2,170
Poultry Products	7,421
Fur Farming	608
Clover and Grass Seed	609
Honey and Wax	527
Total	<u>\$125,714</u>

Of these farms, some 22,500, or about 39%, produced grain, chiefly wheat, oats and barley, and the balance was largely divided into mixed farming, live stock and dairy farming.

Wheat, for which Manitoba is justly famous, has always been the most important item of agricultural production. Of the total cultivated acreage of some 7,500,000 acres, some 2,440,000 were devoted

to wheat production in 1941, and the gross value of the wheat production amounted to approximately \$27,000,000 out of a total gross value of \$74,458,000 for all field crops. Wheat thus represented some 36% of the field crop value and 21.5% of the total agricultural production value. Normally, oats and barley are together of about equal importance to wheat, but, during the war years, the combined production and value of barley and oat crops have exceeded that of the wheat crop. Flax, potatoes, hay and clover are also important field crops. During the war years production of flax increased about sevenfold, and the value some elevenfold, with the 1945 crop valued at some \$6,832,000. A recent and important addition to the agricultural economy is the beet sugar industry established in 1940. This is more fully dealt with under sugar production.

While wheat will probably continue to represent the largest single item of production, Manitoba has achieved a wider measure of diversification than the other Prairie Provinces. This is illustrated by the fact that the average acreage per farm in Manitoba is smaller and the income per acre greater as shown by the following table from the farm census for 1941:

	Revenue per Farm \$	Acreage per Farm	Value per Farm \$	Revenue per Acre \$
Alberta	1,484	433.0	7,128	3.42
Ontario	1,344	125.6	6,675	10.70
British Columbia	1,274	152.8	5,685	8.33
Manitoba	1,254	291.1	5,845	4.31
Saskatchewan	1,219	432.2	6,466	2.82
Quebec	900	123.9	4,781	7.26
Canada	1,173	238.5	5,787	4.92

Arising from the war-time shortage of vegetable oils, cultivation of soyabean, sunflower and rape was undertaken. The future market for these oil-bearing crops has still to be determined

Live stock production ranks next in importance to field crops, representing in 1941, some 19% of all agricultural production. Cattle and swine comprise the bulk of the live stock, with sheep some 3 - 4% of the total value of production.

Dairy and poultry production rank in third and fourth place respectively. Their steady growth is a significant factor in the diversification of Manitoba's agriculture.

The importance of agriculture is not, however, to be measured in terms of production alone. The major manufacturing industries of Manitoba - namely, packing-house, milling and, in addition, the dairy industries and numerous others supplying the requirements of the rural population, - are directly dependent upon agriculture. The development of other primary industries, such as pulp and paper, is decreasing this dependence, but, for some time to come, a great majority of the population of Manitoba will be dependent upon the prosperity of agriculture. The prosperity of the province will thus be largely affected by agricultural yields and, also, in a large measure by the export market for grain, live stock and their products.

In the years from 1939 to 1946, Manitoba has experienced a period of high agricultural production and rising prices with, consequently, a generally high level of prosperity. This has enabled agriculture and the agricultural industries to generally improve their position. Efforts, national and international, are being made to stabilize agricultural production and income. While an unlimited demand and high prices duplicating the recent war years cannot be anticipated, Manitoba's agriculture enters the post-war period on a more firmly established basis and fully aware of

the difficulties ahead. Further expansion of agriculture can be expected from the development of new agricultural areas and by further diversification of farm production. The greater part of the suitable and more fertile land of the province has been settled, but development of new areas, such as the Carrot River Valley, will increase the overall acreage. It has already been pointed out that Manitoba farms are smaller and the yield per farm higher than in the other Prairie Provinces, thus reflecting the higher percentage of mixed farming and dairy farming, etc. Climatic conditions in much of the agricultural area of Manitoba are suitable to mixed farming and it is, therefore, not unreasonable to expect increased diversification in farming. As field crops are replaced by mixed farming, smaller farms and a larger farm population should result.

Mining Industry

The mineral production of Manitoba, metallic and non-metallic, has, in the last two decades, become one of the most important assets of the province. In 1939 the value of the gross production represented some 10% of the total for the province, and was only exceeded by agriculture and the meat packing industries. Due to the exigencies of the 1939 - 1945 period, there was some falling off in mining production, and the relative value of mining declined due, in large measure, to the higher prices obtained for agricultural products. With a return to more normal conditions, the mining industry should rapidly recover its former position.

The value of mineral production, metallic and non-metallic, over some years was as follows and the rapid growth will be noted:

	Non-Metallics Value \$	Metallics Value \$	Total for Manitoba Value \$	Total for Canada Value \$
1916	1,823,576	0	1,823,576	177,201,534
1926	3,069,631	3,897	3,073,528	240,437,123
1929	4,958,238	465,587	5,423,825	310,434,726
1930	4,582,934	870,248	5,453,182	279,873,578
1931	2,938,428	7,119,380	10,057,808	230,434,726
1935	1,578,324	10,474,093	12,052,417	312,344,457
1937	1,814,267	13,937,378	15,751,645	457,359,092
1939	1,784,883	15,353,047	17,137,930	474,602,059
1940	2,713,803	15,114,719	17,828,552	529,825,035
1941	2,441,537	14,248,330	16,689,867	560,241,290
1942	2,856,059	11,488,987	14,345,046	566,768,672
1943	3,241,746	10,170,520	13,412,266	530,053,966
1944	3,446,054	10,384,352	13,830,406 *	482,260,463

* Tentative

The geology of Manitoba is particularly favourable to the development of a large mineral industry. The formations found in the south and settled portions are the source of the non-metallic minerals such as limestone, gypsum, clays, sands, salt brines, etc. On these minerals are based the important industries of the province manufacturing cement, plaster and plaster products, lime, bricks and salt.

The Pre-Cambrian formation, which covers some three-fifths of the province, is found in the eastern area adjoining the Ontario border and covers most of the northern and unsettled area. In this formation, which is the main source of all Canada's metallic mineral deposits, are found the gold and silver, copper and zinc deposits which have largely accounted for the rapid growth of the Manitoba mining industry. It is particularly noteworthy that the greater part of the non-ferrous metal production has come from one producer - Hudson Bay Mining and Smelting Company, located astride the Manitoba-Saskatchewan border at Flin Flon in the more northerly part of the province. One of the outstanding mining and smelting operations in Canada, this Company produces copper

and zinc, gold and silver, smaller quantities of cadmium and other metals and also smelts copper and zinc concentrates from nearby Sherritt Gordon property. The importance of this operation is well illustrated by the fact that the town of Flin Flon, with a population of some 9,000, is the fourth largest municipality in the province.

Important producers of gold and silver are located in the Pre-Cambrian area near the transcontinental railways and the Ontario border. More recently, nickel and copper ore bodies have been found in the Lynn Lake area and are being actively investigated. In the Snow Lake area a large gold ore body has been developed and production is being planned. Large deposits of chromite ores have been discovered in Southeast Manitoba and extensively explored but, as yet, commercial operations have not been undertaken.

It can be confidently predicted that, as prospecting and exploration proceeds, additional metallic mineral producers will be developed. The relative importance of the Hudson Bay Mining and Smelting operation to the mineral production as a whole and to the overall economy of the province indicates the influential role the mining industry can play in the future industrial development of the province and the diversification of its industry.

Forestry

The forest resources of Manitoba are important sources of fuel, merchantable timber and pulpwood and support a flourishing pulp and paper industry. While extensive, they are limited by their inaccessibility; and recent estimates indicate that about 17.6% of the total productive forest area, or some 4,128 square miles, contains merchantable or saleable timber. The following tables show estimated timber reserves by districts and varieties of timber:

<u>District</u>	<u>Hardwood Cords</u>	<u>Coniferous Cords</u>
Assiniboine	2,444,500	21,200
Whitemouth	1,767,000	1,810,000
Lake Winnipeg East	1,842,000	3,808,000
Lake Winnipeg	2,214,000	931,000
Lake Winnipegosis	4,078,000	1,360,000
The Mountain	8,036,000	2,266,000
Saskatchewan River	536,000	756,000
Upper Nelson	464,000	1,937,000
	<u>21,381,500</u>	<u>12,889,200</u>

Hardwood and Coniferous

Aspen (poplar)	48.9%
Black Spruce	17.5%
Jack Pine	10.7%
Balsam Poplar	10.3%
White Spruce	8.7%
White Birch	1.8%
Balsam Fir	1.3%
Miscellaneous Hardwood	0.6%
Miscellaneous Coniferous	0.2%

The gross value of forest products for 1939 and 1942 in

Manitoba and Canada was as follows:

<u>Year</u>	<u>Manitoba Value \$</u>	<u>Canada Value \$</u>	<u>Manitoba Percentage of Canada</u>
1939	5,820,349	466,032,290	1.25
1942	8,807,565	763,988,245	1.15

It is estimated that some 80% of the fuelwood supply comes from farms, and that some 90% of the pulpwood and saw logs are spruce.

Pulp and paper are produced at two mills. The Manitoba Paper Company, operating at Pine Falls, produces mechanical and sulphite pulp for the manufacture of newsprint and has a rated capacity of 250 tons per day of newsprint. This operation is one of the more important industries of the province, utilizing substantial quantities of hydro-electric power and providing employment both in the mill and in the woods operation supporting it. Most of the newsprint manufactured is exported. Building Products Limited operate a mill producing pulp, mainly from black poplar, for the manufacture of building board and roofing papers. While not a large operation in terms of the pulp and paper industry, it is an important addition to Winnipeg's industries.

Poplar, which forms the largest portion of the wood available in Manitoba, is not being extensively used except for firewood. It is, however, suitable for the production of special pulps, such as soda pulp, and mechanical pulps for building boards. It is also suitable for certain timber products, such as boxes, matchwood and low cost furniture. Poplar is the species in the province whose annual increment will sustain further large industrial expansion, and consideration for its use for these purposes is warranted.

Production of lumber at sawmills operating in Manitoba, together with the gross value, for 1938 to 1944, were as follows:

<u>Year</u>	<u>Quantity M.Ft.B.M.</u>	<u>Gross Value \$</u>	<u>Total Gross Value of Sawmill Products \$</u>
1938	52,190	975,979	1,086,538
1939	60,748	1,118,391	1,206,727
1940	77,348	1,606,120	1,736,172
1941	85,918	2,113,386	2,253,209
1942	82,243	2,286,034	2,493,695
1943	71,536	2,379,356	2,538,835
1944	77,021		

The majority of the mills are small portable mills, but there is one mill in operation which has an annual capacity of 20,000,000 board feet and about six mills with an annual capacity of about 2,000,000 - 4,000,000 board feet. Some 30% of the lumber is produced from logs imported from Saskatchewan and is chiefly spruce.

Fisheries

A substantial fresh water fishing industry exists in Manitoba dependent upon the large inland lakes, and mainly supplying the United States market. In recent years production has represented some 36% of the total fresh water fishing catch of Canada. The main species caught are pickerel, sauger, whitefish, tullibee and pike. Some 50% of the catch comes from Lake Winnipeg and the larger part of the catch takes place in the winter. Winnipeg gold-eye, while a relatively small production, are probably the best known of Manitoba's fish products.

Several filleting plants are established in Winnipeg, and this operation is also carried out at Selkirk, Gimli and a number of other points, mainly for export. Some of the more important market centres are Chicago, New York and Cleveland. The quality of the fish shipped enjoys a high reputation.

Recovery of by-products is practised only in a very limited way owing to the small quantities of fish scrap available at individual points.

Production over the five-year period 1938 - 1945 averaged about 32,500,000 pounds per year. Production and value in 1939 and 1945 were as follows:

<u>Year</u>	<u>Pounds</u>	<u>Value as Marketed \$</u>
1939	34,078,600	1,769,474
1945	27,293,100	3,228,099

Gross productive value represented some 0.5% to 0.6% of the total for the province.

To date there has been no large scale exploitation of the fisheries of Hudson Bay, and the quality and quantity of commercial fish there available are somewhat indefinite. The remoteness to market would seem to preclude any immediate development. The possibility of the establishment of a white whale (the beluga) industry had received some consideration.

The fisheries of the province are administered by the Provincial Department of Mines and Natural Resources who also operate a number of hatcheries.

Furs (Trapping and Farming) and Game

Manitoba is one of the important fur-bearing areas of the Dominion, and the value of the province's fur production is some 10 - 15% of the total for Canada. The production and value have increased some three-fold since 1939. In 1945 the total value of Manitoba's fur production was approximately \$4,800,000 from both fur farms and trapping. A substantial fur processing industry has been established. The greater part of the furs

produced and processed is exported out of the province. The fur trapping industry operates under the Provincial Department of Mines and Natural Resources and through this Department, the Provincial Government has promoted the conservation and development of muskrat trapping, particularly in the Summerberry marsh in the general area of The Pas.

The game resources of Manitoba are among the finest in Canada. Wild fowl abound throughout Southern Manitoba, and the northern areas of lakes and forests are a natural habitat for deer, moose, caribou, bear and elk as well as smaller game. The game resources are one of the main tourist attractions.

Tourist Trade

The tourist trade of Manitoba represents only some 2 - 3% of the total for Canada. Remoteness from the heavily populated areas of the Eastern United States largely accounts for this, but Manitoba, with its large areas of lakes and forests abounding in wild life, has potential tourist possibilities which warrant fuller exploitation.

Construction

During the war there was a curtailment of construction for other than war purposes. A substantial backlog of building and public works, therefore, exists, and it seems reasonable to assume that the construction industry in Manitoba will be fully occupied for some time to come.

Manufacturing Industries

Manitoba has developed substantial and diversified manufacturing industries, whose gross production is some 4% of the total for Canada and about 50% of that of the Prairie Provinces.

In general, the growth of these industries in Manitoba has paralleled the growth in Canada as a whole. A further steady expansion is to be anticipated paralleling the general Canadian expansion; but due to the lower degree of industrialization in Western Canada, this should be relatively greater for Manitoba than for Canada as a whole. If a national Canadian immigration policy is brought into force, it may also assist the growth factor of the province.

Of basic importance to the manufacturing industries of Manitoba are the availability of low cost hydro-electric energy and an unusually diversified and skilled supply of labour.

Some 60% of all raw materials used in the manufacturing industries of the province are derived from agricultural products, and of these the packing-house and flour milling industries are the largest individual industries. These industries and, in addition, the important copper and zinc smelting and pulp and paper industries are largely dependent upon export markets. Among the more important manufacturing industries dependent upon the domestic market are the dairy, railway rolling stock, clothing, cotton and jute bags, food and printing and book-binding industries.

The most promising possibilities of expansion of manufacturing industries lie, we believe, largely in those industries serving the domestic market and, mainly, the Western Canadian market. The greatest possibilities appear to lie in: (1) Industries utilizing local raw materials and producing commodities which pay a relatively high freight rate in relation to the selling price if shipped from Eastern Canada. Construction materials are largely in this class, and cement, already manufactured in Manitoba, is a good example; as also are food products.

(2) Industries where the selling price is high in relation to the cost of raw materials and in which, consequently, Manitoba producers are not at a serious disadvantage in respect to Eastern Canadian industry. An example is the textile industry and, more particularly, the clothing industry. Such industries may even be able to compete in the Eastern Canadian market.

Industries affiliated with the transportation industry would appear to have an unusually favourable growth factor, due to Winnipeg's importance as a rail and air transportation centre.

Serious consideration should be given to the establishment of more of the basic manufacturing industries. At the present time some basic commodities such as acids, alkalis, solvents, etc. are imported from Eastern Canada and bear a relatively high freight rate. While the present Western Canadian market is small, a larger demand would exist if they were available at lower cost, and their establishment in the province would stimulate expansion of other manufacturing industries.

In the export market, the greatest possibilities for further expansion seem to lie in those industries subsidiary to mining and in pulp and paper.

* * * * *

In Volume IV the status of a large number of manufacturing industries in relation to Manitoba is discussed. There is also presented a list covering a wide range of commodities with qualifying remarks as to the status of actual or potential production in Manitoba.

War Plants (Government Owned)

In the course of this Survey special attention has been directed to the possibilities of post-war utilization of the aircraft plant operated for the Government by Macdonald Bros. Aircraft Limited and the Transcona cordite plant. The former has already been largely converted to peace-time industry. We have been unable to discover any immediate industrial use for the site and facilities of the cordite plant, due chiefly to its large size and distance from Winnipeg. The facilities of the plant and its possible industrial use have been discussed in a separate report and also in Volume IV. The fact must be recognized that this plant was a large scale explosive plant specially designed for this purpose and not easily adaptable to other industrial uses.

C O N C L U S I O N S

This Survey was planned with a view to assessing the possibilities of increased industrialization of Manitoba. Manitoba has achieved a greater degree of industrialization than the other Prairie Provinces. Winnipeg is the largest manufacturing centre in Western Canada and the fourth largest retail distribution centre in Canada. It has the distinction of being one of the great transportation centres of Canada.

In the field of primary production, Manitoba has developed a substantial and important mining industry, metallic and non-metallic, and a thriving pulp and paper industry. A large variety of manufacturing industries has been developed supplying consumer demands, among the more notable being the food industries and the textile industries, more particularly the clothing industry. Substantial manufacturing industries have also been developed supplying the needs of the transportation industries.

Major assets of Manitoba are the water power resources and hydro-electric developments; the wide variety of raw materials, agricultural and mineral; the large potential mining areas; Winnipeg's strategic position as a distribution and transportation centre; and the unusually diversified and skilled supply of labour.

During 1946 when this Survey was being carried out, the industries of Manitoba were operating at high capacity and, in many instances, at record capacity; the manufacturing industries were no exception. If continued peak export demands for agricultural products could be anticipated, a high rate of industrial activity should continue and a further marked expansion of industry take place. Past experience, however, shows that crop yields vary widely and that export markets are dependent upon world-wide conditions and Government policies, domestic and foreign. A

further expansion of industry, based on agriculture and agricultural exports, appears improbable in the near future since present world conditions will tend to stabilize. Any decline will be reflected in many of the manufacturing industries. A further expansion of Manitoba industries should preferably, therefore, be directed towards those industries not directly dependent upon agriculture.

The existing mining industry of Manitoba supplies many important non-metallic raw materials, and metal mining is one of the major industries of the province. The importance of mining to the future of Manitoba cannot be too highly stressed. This is exemplified by the part mining plays in the economics of some of the other provinces and by the fact that the operations of Hudson Bay Mining and Smelting Company at Flin Flon support the fourth largest municipality in Manitoba, providing a substantial market for other industries and supporting a large consumer demand. Establishment of similar mining operations in other areas would have a most favourable effect on Manitoba's economy. The large potential mineral areas, the available water power resources, the accessibility now provided by air transport are all favourable to mining development. Every assistance should be given to the mining industry by both Government and private industry.

The manufacturing industries of Manitoba have been reviewed at some length in Volume IV. The most favourable opportunities of expansion appear to lie in those industries supplying the Western Canadian market. The possibilities of also supplying the large Eastern Canadian market and the U.S. market to the south should not be overlooked. Industrial developments generally would be stimulated by the production of more basic commodities, particularly in the chemical field. Manufacture of such products as sulphuric acid, caustic soda, chlorine, and soda ash, although present markets are small, would lead to expansion of existing industries and

establishment of new industries.

The discovery and development of large natural gas fields in Alberta and Saskatchewan make natural gas a potential fuel supply for the larger centres of population in Manitoba. The economy of the province as a whole would be greatly stimulated if a supply of this most desirable and low cost fuel could be made available. The possibilities of natural gas transmission to and distribution within Manitoba warrant the fullest investigation.

Manitoba's development will be markedly affected by Federal policies of immigration, tariffs and transportation. The necessity of an active and aggressive policy in these matters is self-evident. The province, however, has a long record of steady industrial growth. The war has greatly stimulated industrial development. Large scale manufacture of military explosives demonstrated the feasibility of highly technical operations and the capability and efficiency of local labour and management. It can be assumed that the industrialization of Manitoba will continue to progress and that a greater diversification of her industries will result.

The assistance of the Industrial Development Board and the support derived from existing industries and from the leading citizens of the province are of paramount importance in the establishment and consolidation of new industries.

January 1947

Volume II

INDUSTRIAL SURVEY

of

The Resources

of the

Province of Manitoba

1947



Prepared for the

INDUSTRIAL DEVELOPMENT BOARD
OF MANITOBA

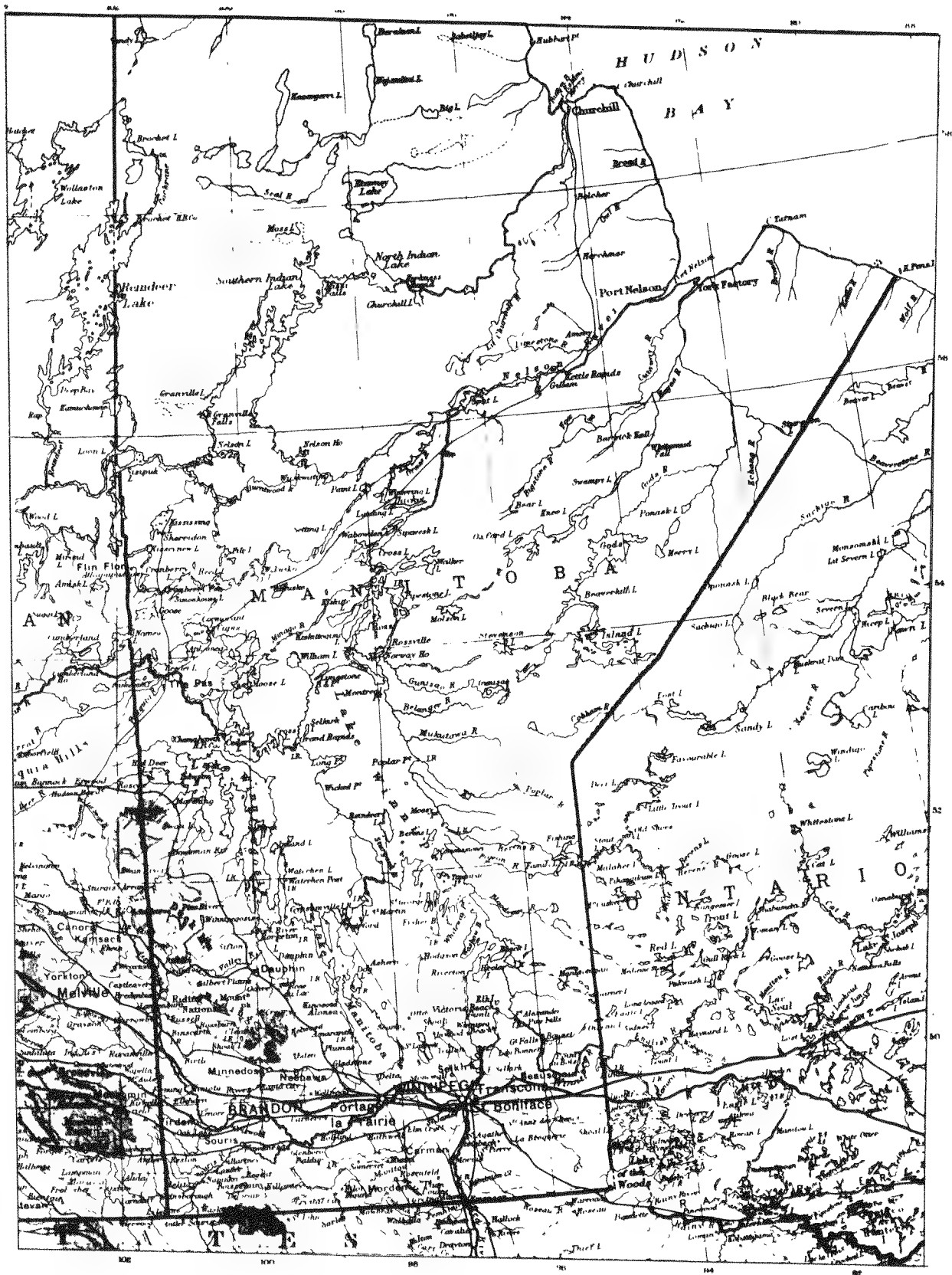
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DONALD, ROSS & COMPANY
Montreal

VOLUME II
I N D E X

	<u>Page Nos.</u>
Geography and Topography	1 - 2
Water	2 - 5
Geology	5 - 7
• Soils	8 -11
Climate.	12 -15
Population	15 -19
Labour.	20 -22
Educational Facilities	23 -25
Transportation	26 -34
Communications	34 -36
Fuel	37 -40
Power Resources	41 -47
Markets	48 -79
Population.	48 -49
Trade and Production	49 -69
Purchasing Power	69 -76
Purchasing Habits	76 -79

MAP OF MANITOBA



GEOGRAPHY AND TOPOGRAPHY

Manitoba, frequently called the centre of Canada, was named as a province in 1870. Its boundaries have been extended at different times, the last extension being in 1912. The oldest in point of settlement and the most easterly of the Prairie Provinces, it includes the area bounded by the United States on the south (49th parallel), Saskatchewan on the west, Ontario on the east, Hudson Bay on the northeast and the Northwest Territories on the north (60th parallel). The Hudson Bay coast of Manitoba extends over 400 miles and includes the port of Churchill.

The total area of Manitoba is 251,832 square miles, of which some 58%, mainly the northern area, is relatively inaccessible. Lakes and streams abound, and it is estimated that some 11% of the total area is covered with water.

The conformity of the surface of Manitoba is relatively even. The topography of the southern half of the province is characterized by a great basin occupied in part by the larger lakes and draining through the Nelson River in a north easterly direction into Hudson Bay. This basin, in which are found some of the best grain-growing lands in the world, is referred to as the first prairie steppe. Commencing near the intersection of the international boundary and the 98th meridian of west longitude and extending in a north westerly direction, there is a discontinuous chain of hills known as the Manitoba Escarpment. This chain marks the transition between the first and second prairie steppes and includes the Pembina Hills in the south and the Riding, Duck and Porcupine Mountains. It is characterized by steep slopes towards the east and northeast. The greatest elevation, 2,727 feet above sea-level, is attained in Duck Mountain. The elevation of Lake Winnipegosis is 831 feet, that of Lake Manitoba 814 feet, and that of

Lake Winnipeg 715 feet. East of Lake Winnipeg the land rises towards the Ontario boundary to an elevation of about 1,050 feet.

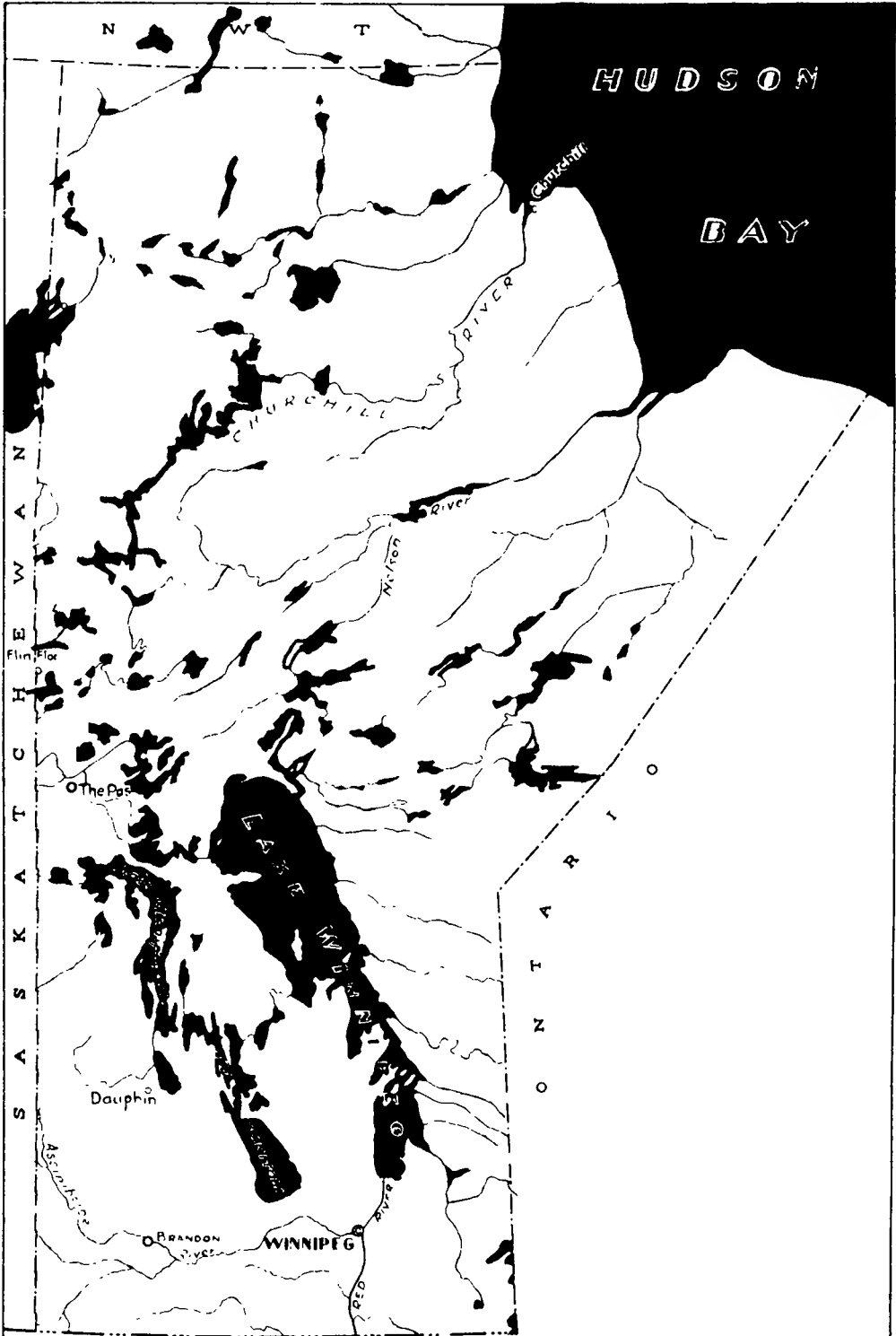
Except for the hills of the escarpment, the surface of the province is of low relief, varying from the approximate dead level of the swamps and some of the grasslands to a low rolling surface where elevations of more than 100 feet above the surrounding terrain are unusual. The general north-easterly slope of the northern areas is shown by the courses of the Nelson and Churchill Rivers.

A most important asset is found in the main rivers traversing the Canadian Shield, particularly the Winnipeg and the Nelson. These rivers have a large flow and contain many rapids suitable for the production of hydro-electric power.

WATER

Manitoba as a whole is well supplied with lakes and rivers as can be seen from the map. The main river systems in the north are the Churchill and the Nelson, and in the middle and south, the Saskatchewan, Assiniboine, Red and Winnipeg. Under normal conditions a heavy flow is maintained in all these rivers throughout the year, although some of the smaller rivers, feeding these two systems, have become dry during drought periods.

Another waterway of great importance to industry is that which supplies a large proportion of Greater Winnipeg. This waterway, artificially made, carries water from Shoal Lake, a western arm of the Lake of The Woods, to Winnipeg and assures an ample supply of good water. The source at Shoal Lake may be considered inexhaustible. The waterway which was completed in 1919 consists of a large covered concrete aqueduct extending from Shoal Lake, down grade 84.5 miles to Deacon, just east of St. Boniface. From Deacon the water is pumped under pressure through a large pipe to the



WATER RESOURCES IN MANITOBA.

reservoirs at Winnipeg. The capacity of the aqueduct to Deacon, gravity flow, is 85 million gallons per day. The present capacity of the system from Deacon to the reservoirs is 30 million gallons per day. The average daily consumption in the year 1944 was 16,372,933 gallons with a maximum pumpage for one day of 22,810,000 gallons.

The waters of Shoal Lake and the Winnipeg River are of excellent quality having relatively low hardness and total solids. The majority of the other waters in the settled portions of Manitoba are hard and contain relatively high total solids. The total hardness and solids are shown below for a number of waters. The first five are civic waters. The remaining samples were taken directly from the rivers or lakes as noted.

Source of Water	Place	Date Sampled	Total Hardness	
			Calcium Carbonate	Total Solids
			Parts per Million	
Shoal Lake	Winnipeg	3/ 9/43	94.9	120.5
Assiniboine	Brandon	3/ 9/42	331.5	550.0
Assiniboine	Portage la Prairie	31/ 8/43	342.4	548.5
Edwards Creek	Dauphin	3/ 9/43	293.3	375.5
White Mud River	Neepawa	31/ 8/43	283.1	336.5
Winnipeg River	Great Falls	2/ 6/43	56.3	89.8
Souris River	Souris	-	213.0	460.0
Artificial Lake	Morden	20/ 9/45	575.0	1020.0
Boyne River	Carman	7/ 1/43	466.0	625.0
Brokenhead River	Hoben's Park	25/10/45	242.0	278.0
Lake Dauphin	Dauphin Beach	5/ 1/45	428.0	676.0
Saskatchewan River	The Pas	27/ 4/45	124.0	220.0

Well Waters

Information with reference to well waters is rather limited. In many localities the water is saline and in others the supply is uncertain.

From 1900 until the time the Shoal Lake water supply was installed, the City of Winnipeg was supplied with water from artesian wells. The flow, however, was uncertain and in some wells saline water was encountered. It is believed that the supply of well water in the Winnipeg district is sufficient to supply a reasonable demand by any new industry requiring such water. The same is true of some other localities in Manitoba. The temperature of these artesian well waters is about 40°F throughout the year. A site of a new industry dependent on large quantities of well water should be chosen with care.

Water Rates to Industry

The following water rates apply to those industries served by the Greater Winnipeg Water District.

Rate - 35 cents per 1000 gallons subject to the following rates of discount

Quarterly Consumption	Discount
100,000 gals. and less than 200,000 gals.	20%
200,000 " " " " 400,000 "	25%
400,000 " " " " 600,000 "	30%
600,000 " " " " 800,000 "	35%
800,000 " " " " 1,000,000 "	40%
1,000,000 " " " " 5,000,000 "	45%
5,000,000 gals. and upwards	50%

The water rates at Brandon are as follows:

General Rate

Up to 8,000 cu. ft.	35.00 cents per 100 cu. ft.
8,000 and less than 15,000 cu. ft.	30.80 " " " " "
15,000 and upwards	25.20 " " " " "

Special Rate

Up to 30,000 cu. ft.	19.60 " " " " "
30,000 and less than 60,000 cu. ft.	18.62 " " " " "
60,000 " " " 80,000 " "	17.64 " " " " "
80,000 " " " 100,000 " "	16.66 " " " " "
Over 100,000	15.68 " " " " "

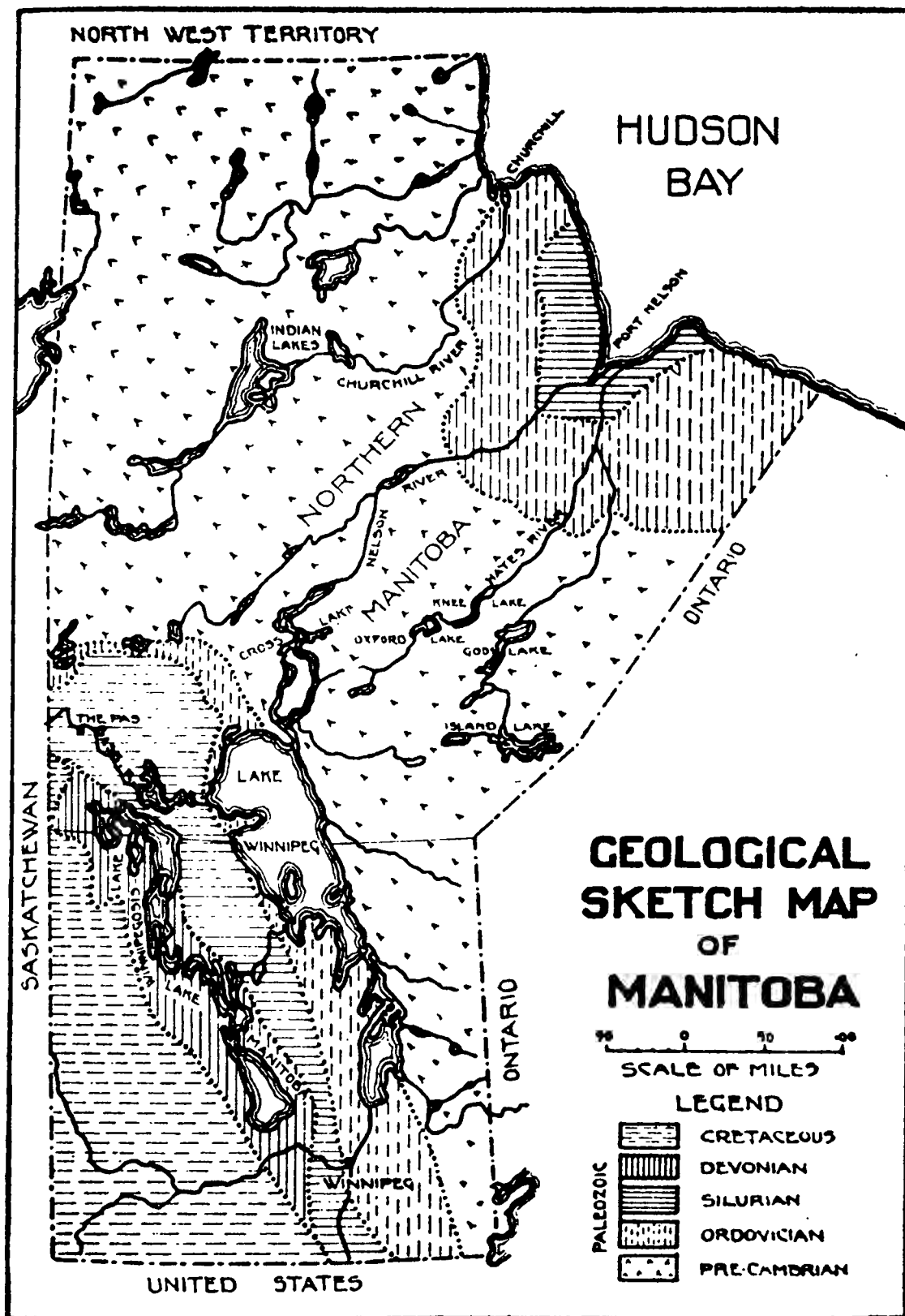
100 cu. ft. equals 625 gallons

GEOLOGY

The bedrock of Manitoba consists largely of three major groups of rocks which in order of the area covered, are Pre-Cambrian, Palaeozoic and Mesozoic as shown by the attached geological map.

The Pre-Cambrian formations, igneous and metamorphic rock, comprise three fifths of the area of the province and underlie the Palaeozoic and the Mesozoic in the remaining area. The southwestern limit of the Pre-Cambrian may be roughly defined by a line projected through the major axis of Lake Winnipeg from the southeastern corner of Manitoba and then westerly to the middle of the western boundary of the province. The area northeast of this line is Pre-Cambrian with the exception of an area along Hudson Bay southward to the Ontario border.

The Palaeozoic formations comprise the bedrock of about one quarter of the province and are in two sections, along the Hudson Bay as noted above and in the southwest part of the province bordered on the northeast by the



Pre-Cambrian line and on the southwest by the Mesozoic line. The latter line extends in a northwesterly direction from a point on the United States border just west of the Red River to the Saskatchewan border northwest from the upper end of Lake Winnipegosis.

The Mesozoic formations comprise the bedrock for the balance of the southwest portion of the province representing about one-seventh of the total area. They overlie the Palaeozoic formations.

The unconsolidated formations of the Cenozoic age are scattered throughout the province particularly in the southwest.

Economic Geology

Pre-Cambrian.

The Pre-Cambrian formations are the source of the important existing metalliferous mining industries of the province and a great potential source of mineral wealth. Known mineral areas are indicated on the map attached. Copper, gold, zinc and silver are the principal metals presently produced. In addition to the above metals, selenium, tellurium and cadmium are being recovered. Small quantities of tungsten concentrates have been produced occasionally and more recently a small amount of thallium was recovered. Other metals which may possibly occur in sufficient quantity to warrant their economic recovery are nickel, arsenic, tin, chromium, lithium, beryl and molybdenum. Antimony, lead and traces of mercury occur and tantalites and uraninites have also been found.

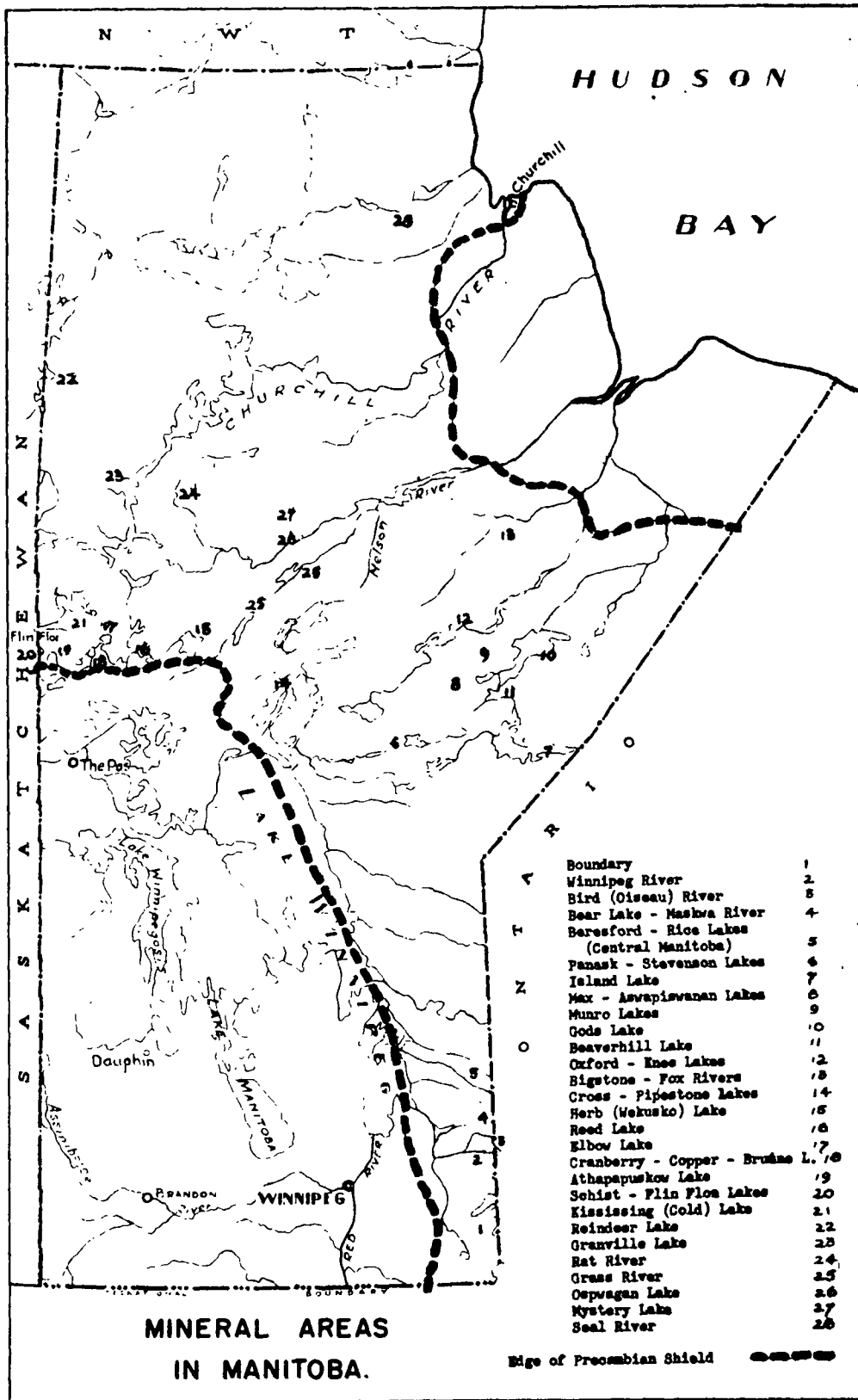
Palaeozoic Formations

Devonian - limestone and dolomite

Silurian - gypsum beds

Ordovician- Stoney Mountain - Shales, limestone and Winnipeg sandstone.

No metalliferous deposits have been found in these rocks. The



Boundary	1
Winnipeg River	2
Bird (Oiseau) River	3
Bear Lake - Maskwa River	4
Beresford - Rice Lakes (Central Manitoba)	5
Panask - Stevenson Lakes	6
Island Lake	7
Max - Asowapiwanan Lakes	8
Munro Lakes	9
Gods Lake	10
Beaverhill Lake	11
Oxford - Ince Lakes	12
Bigstone - Fox Rivers	13
Cross - Pipestone Lakes	14
Herb (Wekusko) Lake	15
Reed Lake	16
Elbow Lake	17
Cranberry - Copper - Bruma L.	18
Athapapuskow Lake	19
Schist - Flin Flon Lakes	20
Kiasiasing (Cold) Lake	21
Reindeer Lake	22
Granville Lake	23
Rat River	24
Grass River	25
Ospwagan Lake	26
Mystery Lake	27
Seal River	28

non-metallics, however, are of considerable economic importance and include limestone, dolomite, gypsum, salt and sand.

Mesozoic Formations

Upper Cretaceous - Pierre, Niobrara and Benton Shales and
Dakota sandstone.

Lower Cretaceous - Grey-brown shales

Jurassic - Marine and non-marine shales

With the exception of bentonite the Mesozoic deposits have yielded little material of economic importance.

Clays are being used in the manufacture of brick and some limestone shales have been used in the past in the manufacture of brick and natural cement. Small amounts of natural gas are being produced from Cretaceous formations.

Cenozoic Formations

Early Tertiary beds occur in the upper parts of Turtle Mountain and in other hills in the southwestern part of the province close to the United States border. They contain thin beds of lignite, which are of little economic importance.

Quaternary deposits, formed in glacial and post-glacial times, provide important soils and gravels and sands for road-making and other construction purposes. These deposits also include peat beds which formed in post-glacial times, and some commercial production from them has been developed in recent years.

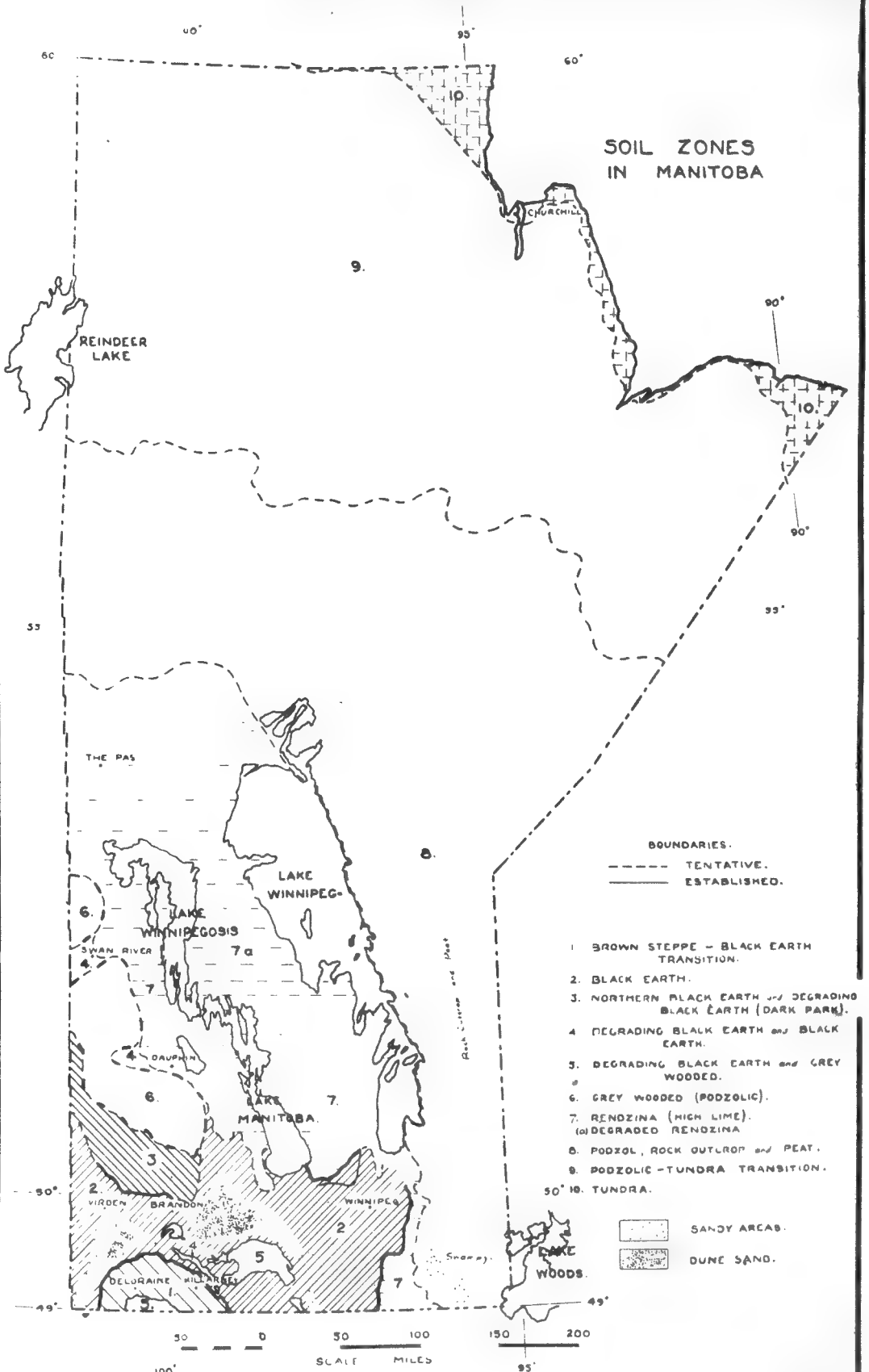
SOILS

The main agricultural areas are founded upon the rich, black soils for which the province is noted and which have their origin in the glacial lakes at one time covering much of the southern and western parts of the province. These soils are amongst the most fertile in Canada. They are excellent soils for most purposes, but are especially suitable for the production of grain, particularly wheat. The soils of the northern portions of the province are not, in the main, particularly suitable for agriculture, consisting principally of acid woodland soils, although, undoubtedly, areas adaptable to agricultural production exist.

The subject of Manitoba soils is quite fully covered in a report prepared by Professor J. H. Ellis of the University of Manitoba entitled "The Soils of Manitoba", and published by the Economic Survey Board in 1938. The information on soils presented below was obtained largely from this report.

The surface soils have been classified under ten different zones on the basis of the common characteristics of the main soil within the zone. The fertile soils are predominantly black, the depth of shade depending on the amount of organic matter present and to the degree of its alteration due to climatic conditions, in particular, leaching by water. Hence, in defining the soils by zones, descriptive terms such as black earth, black earth transition, degraded black earth, grey wooded, rendzina (high lime) and podzol (generally acid) are used.

A brief description of the characteristics of the regional soil in the soil zones, together with a map of these zones, is presented: -



Zone I Brown Steppe - Black Earth Transition Soils.

This soil located in the Deloraine-Killarney district is very fertile because there has been insufficient annual precipitation to leach the plant nutrients out of the soil but sufficient entering the upper part of the soil profile to induce the building up of high organic content. This zone produces the highest protein wheat in the province and is particularly suited to grain production. However, as periodic drought, conservation of water, and soil drifting are the problems of this zone, the yields of grain fluctuate fairly widely.

Zone II Black Earth Soils

The black earth zone covers the larger portion of the farming land in Manitoba. The medium to heavy textured soils in this zone are the best in the province. The heavy textured soils which are found in the Red River Valley are suitable for all types of general crops and failures are rare. The chief problems with the soil are drainage and heavy tillage. If water is supplied by 'dugouts', any type of general farming may be carried out. The light to heavy medium textured soils are located in the Assiniboine Delta and the Souris Basin. The better types of these are excellent for grain-growing and general mixed farming. Soil drifting and occasional drought occur. The soils developed over the area west of the escarpment vary considerably in quality, the black earth soils being the most fertile.

Zone III Northern Black Earth Soils

The zone extends south and west of the Riding Mountain to some distance north of the Assiniboine River. The soils are generally quite fertile being especially excellent for growing oats and barley. The protein content of the wheat grown here tends to be low. On the whole the zone is excellent for grain production and mixed farming.

Zone IV Black Earth and Degrading Black Earth. Mixed Soil Zone.

The degrading black earths are soils which were developed first as black earths with black earth characteristics, but with the invasion of woods and higher humidity the soil forming process was modified. Such areas occur in the Swan River District, Gilbert Plains and Grandview districts west of Dauphin and in the Brandon Hills district. These soils in the Swan River district and the district west of Dauphin are very productive as they coincide with more favourable moisture conditions. It may be noted that these soils respond well to the addition of small quantities of phosphate fertilizers. The zone is suited to grain-growing and mixed farming.

Zone V Degrading Black Earths and Grey-Wooded Soils

This zone occupies the higher altitudes of the black earth zone west of the Pembina Hills and southeast of the Tiger Hills. While the degrading black earths are excellent soils, the grey-wooded soils are not as fertile. Grain-growing and mixed farming predominates in this zone.

Zone VI Grey-Wooded Soils

Unmixed grey-wooded soils occur in the Riding, Duck and Porcupine Mountains. A large portion of this area is under Forest Reserve and as a result only a relatively small portion has been cultivated. Grey-wooded soils in the province are used largely for the production of timber. The surface soils when used for agriculture should be fertilized as they are low in nitrogen, phosphates and possibly potash.

These soils as a whole are more suitable for forestry, mixed farming and live stock production than for grain-growing. Wheat tends to be very low in protein; potatoes and root crops are fair and grasses and clover good. The chief problem in the zone is erosion when the wooded covering is removed.

Zone VII and VIIA High Lime and Degraded Lime Soils.

These zones constitute the West Lake and Inter-Lake areas. Except for small areas of grassland in the southern portion and for areas of peat, the soils were developed under woods. Grey-wooded soils did not develop owing to the high lime content of the parent material. There are, of course, local soils which react acid. In general the soils which are reasonably stone free are good agricultural soils and owing to the high lime content respond well to phosphate fertilizer. Coarse grains, roots and grasses are the most suitable crops. The production of live stock and mixed farming are more suitable as compared to the growing of 'cash grains'. Much of the peat soils in the zone, if properly fertilized with phosphate, would produce excellent hay crops. The main problems in the zone are low soil fertility, drainage, shallow soil depth, stony gravelly soils and peat beds.

Zone VIII Podzol or Acid Woodland Soils.

The Podzol Zone in Manitoba extends in the eastern portion of the province from the Ontario boundary to Lake Winnipeg. In this zone rock out-crop predominates. The chief problem of podzol soils is the building up of fertility. There is some mixed farming in scattered communities with hay being the chief crop. The dominant use of the zone is for timber and fur.

Zones IX and X Podzolic-Tundra Transition and Tundra.

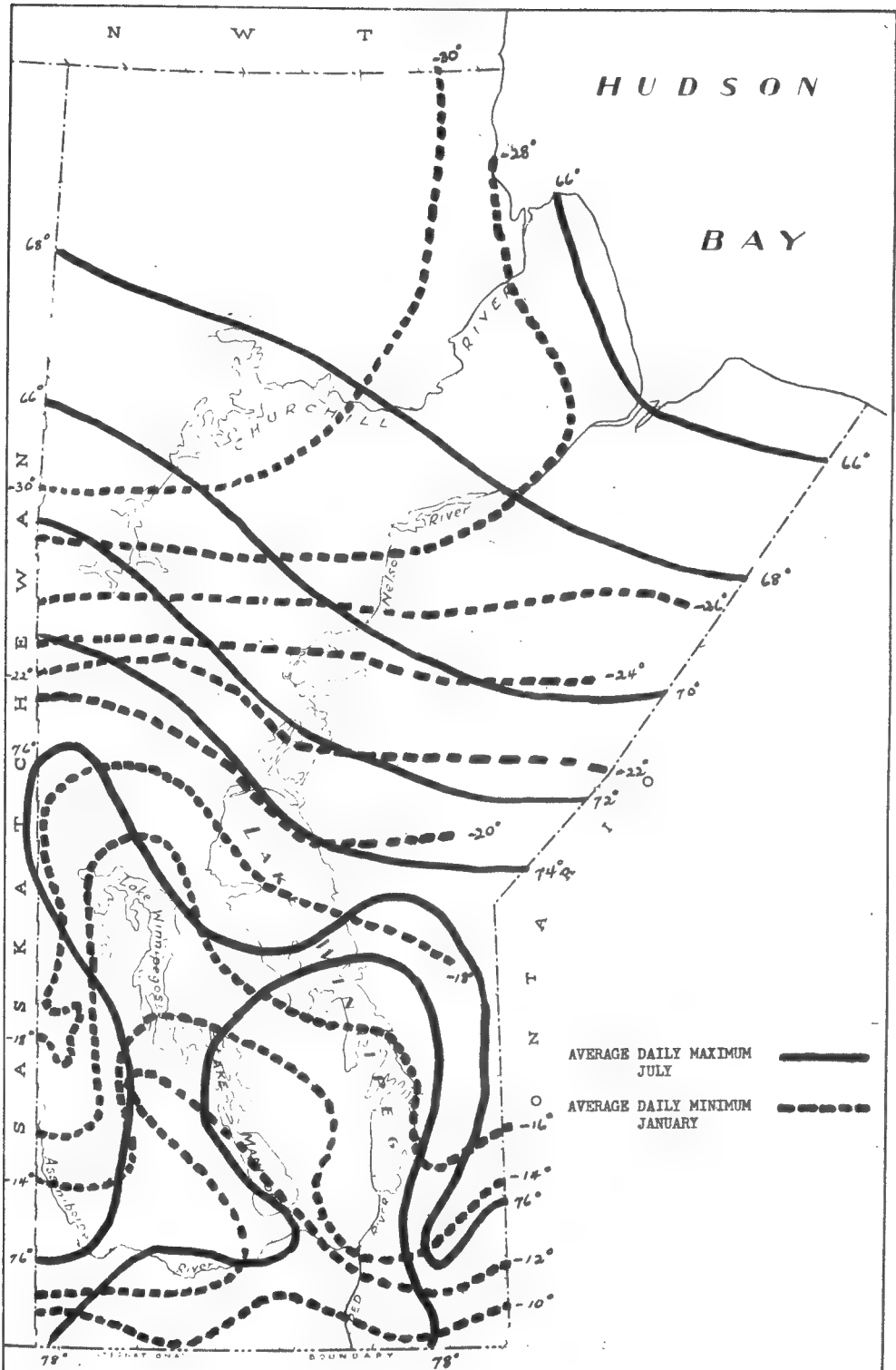
As these zones are both non-agricultural, a study of the soils has not been made.

CLIMATE

The climate of Manitoba, like that of all inland continental areas, is subject to fairly wide seasonal variations, and there is also a wide variation between the north and south of the province. Dealing more particularly with the southern and agricultural areas, the summers are warm with cool night and the frost-free growing season is some 100 - 115 days, varying with location and altitude. This provides excellent growing weather for grain and most vegetables. Precipitation, including rain and snow, varies with the locality from about 16 inches to 21 inches, but the maximum period of precipitation coincides with the growing season, an important factor in agriculture. In common with the western prairie lands of both Canada and the United States, Manitoba has at times suffered from drought, but the dry periods have been less severe than in the other prairie areas. Generally speaking, the winters are long, but the low humidity tends to offset the cold and provide an invigorating climate.

Temperature

The map shown indicates lines passing through points of equal average daily minimum temperature for the month of January and through points of equal average daily maximum temperature for July. From this map the average January minimum and the average July maximum can be read for any desired place. The absolute minimum and maximum at the point selected would, of course, show a greater difference than between the averages. The irregular convolutions of the isothermic lines in the southern half of the province are due largely to the influence of local topography, particularly the large lakes and the chain of hills known as the Manitoba escarpment. The influence of the waters of Hudson Bay in modifying the January minimum can be clearly seen, while the general northwesterly trend of the lines, representing July



AVERAGE TEMPERATURES IN MANITOBA.

maxima in the northern part of the province, is of great importance, as it indicates that conditions more favourable to plant growth are found in that direction, while towards the northeast they rapidly become less favourable.

Frost-Free Period

The length of the growing season is taken as the number of days between the date of the first late frost and the date of the first early frost. In the Red River Valley of Manitoba the average date of the last frost is about the 145th day of the year while the first frost generally appears about the 260th day. This gives a frost-free period of about 115 days. In the southern end of the province adjacent to the international border, between Emerson on the Red River, west to Turtle Mountain and north to Souris there is a region with 110 to 115 days or more continuously free from frost on the average. Generally west of the Red River, however, and south of Lake Manitoba the frost-free period is less than 100 days. Between Winnipeg and Portage la Prairie and along slopes draining towards the southern end of Lake Manitoba and Lake Winnipeg the frost-free period averages about 100 to 109 days, but towards Riding Mountain and the slopes of Moose Mountain ridge draining to the Souris River the period diminishes at some points to less than 80 days. At points such as Dauphin, Swan River and The Pas the average frost-free periods are 97, 109 and 92 respectively. In the eastern portion of the province from Sprague near the international border up through the White Mouth River basin and the area along the east shore of Lake Winnipeg the frost-free period generally varies from 65 to 90 days.

The frost-free period is recorded on the basis of a minimum of 32° to 33° Fahrenheit recorded in the thermometer screen four feet above ground. Some claim is made that this is not significant for wheat growing where a temperature of 29°F to 30°F in the screen is said to denote a killing frost.

On the basis of this temperature the periods noted above are extended 25 - 30 days in southern Manitoba and about 20 days in other points.

Precipitation

The precipitation in Manitoba, including rain and water equivalent of snow is about 19 inches in the southeastern district; about 16 inches in the southwest; about 21 inches in the interlake district; and 13 to 16 inches in the far north. The percentage of annual precipitation which is snowfall, averages about 20 to 25% in most of the southeast and southwest parts of the province but, over the interlake region, the Duck Mountains and the far north, rises to 30% in some places. There appears to be a cyclic variation in annual precipitation which results in a relatively dry period of two or three years, recurring at about eleven year intervals.

The period of maximum precipitation coincides with the frost-free period or the growing season. This is of great importance to agriculture. The following table shows the average rainfall during the growing seasons with the standard deviation above or below average for a number of points throughout the province.

<u>No. of Years Record</u>	<u>Place</u>	<u>Average Rainfall of Growing Season</u>	<u>Standard Deviation</u>
51	Morden	8.53 inches	3.55 inches
20	Deloraine	8.96 "	4.20 "
32	Virden	6.73 "	3.29 "
24	Birtle	7.56 "	3.55 "
51	Brandon	8.82 "	3.23 "
34	Portage la Prairie	9.29 "	2.93 "
62	Winnipeg	9.62 "	3.10 "
30	Dauphin	7.54 "	2.98 "
19	Swan River	8.17 "	2.74 "
25	The Pas	6.42 "	2.34 "

Wind Movement

The prevailing winds in Manitoba are from the west and northwest. Serious damage from windstorms is of comparatively rare occurrence, although occasionally damage from wind occurs in some localities during the sowing season.

POPULATION

The first organized settlement of Manitoba was in 1812 by a company of Scotsmen under Lord Selkirk. When Manitoba became a province in 1871, the population had increased to some 25,228 and, by 1891, had further increased to 152,506. Shortly after this date the large immigration into Western Canada began and, by 1911, the population of Manitoba had reached 461,394, and an even more rapid expansion of the population of the other Prairie Provinces had taken place. By 1941 the population of Manitoba had increased to 729,744.

The following table shows the trend of population of Manitoba and of the other provinces since the year 1871. Also shown is a map of Canada on which is indicated the distribution of population of the ten largest cities in Canada. Based on the 1941 census, Manitoba's population represents 6.4% of that of Canada, and 30.3% of that of the Prairie Provinces. The Prairie population is 21.1% of the Canadian total. Winnipeg is the fourth largest city in Canada, being only exceeded by Montreal, Toronto and Vancouver.

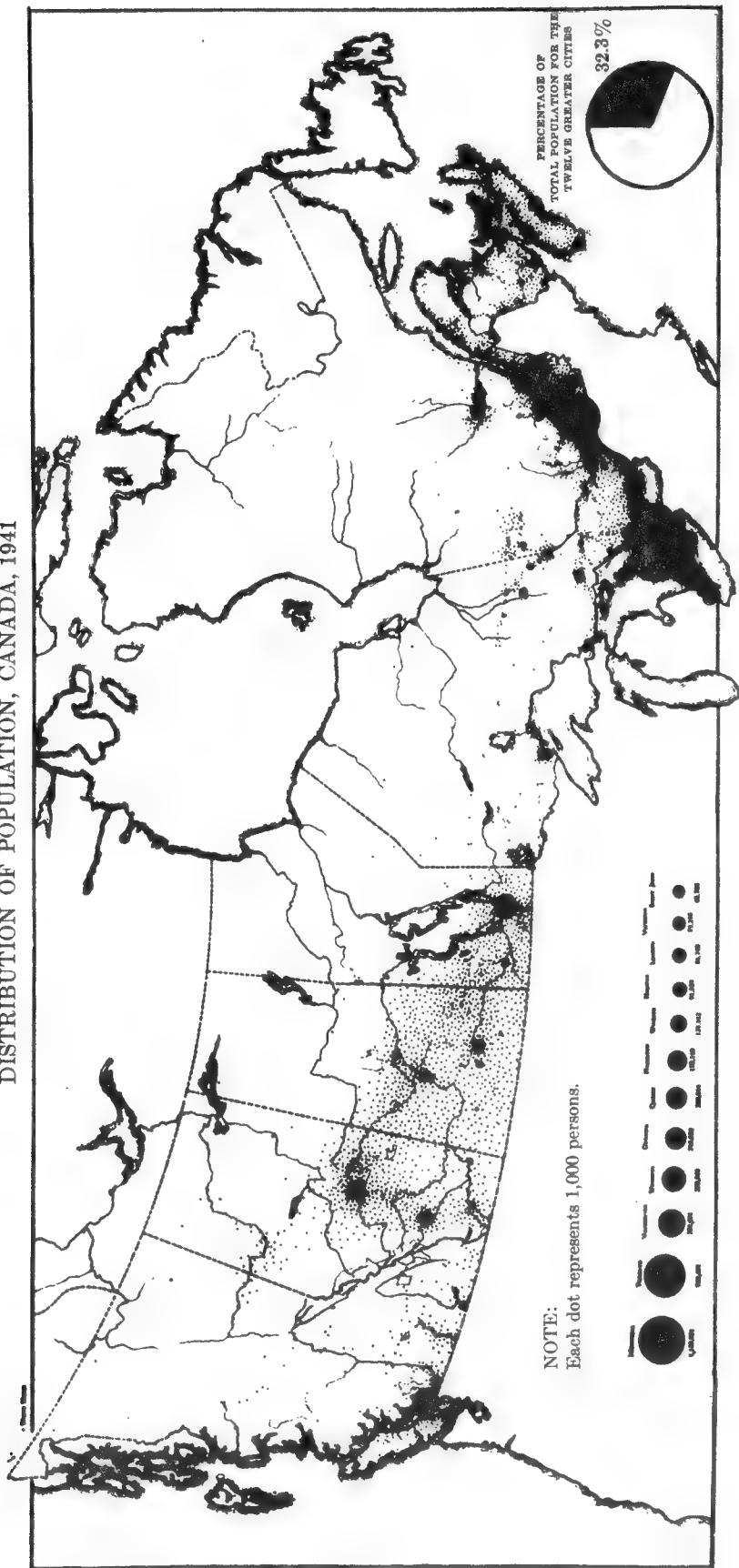
For some years the Canadian national policy has not encouraged immigration into Canada. If an active immigration policy is adopted, it is not unreasonable to assume that Manitoba would share in the increase of population.

Growth of Population of Manitoba and of Other Canadian Provinces

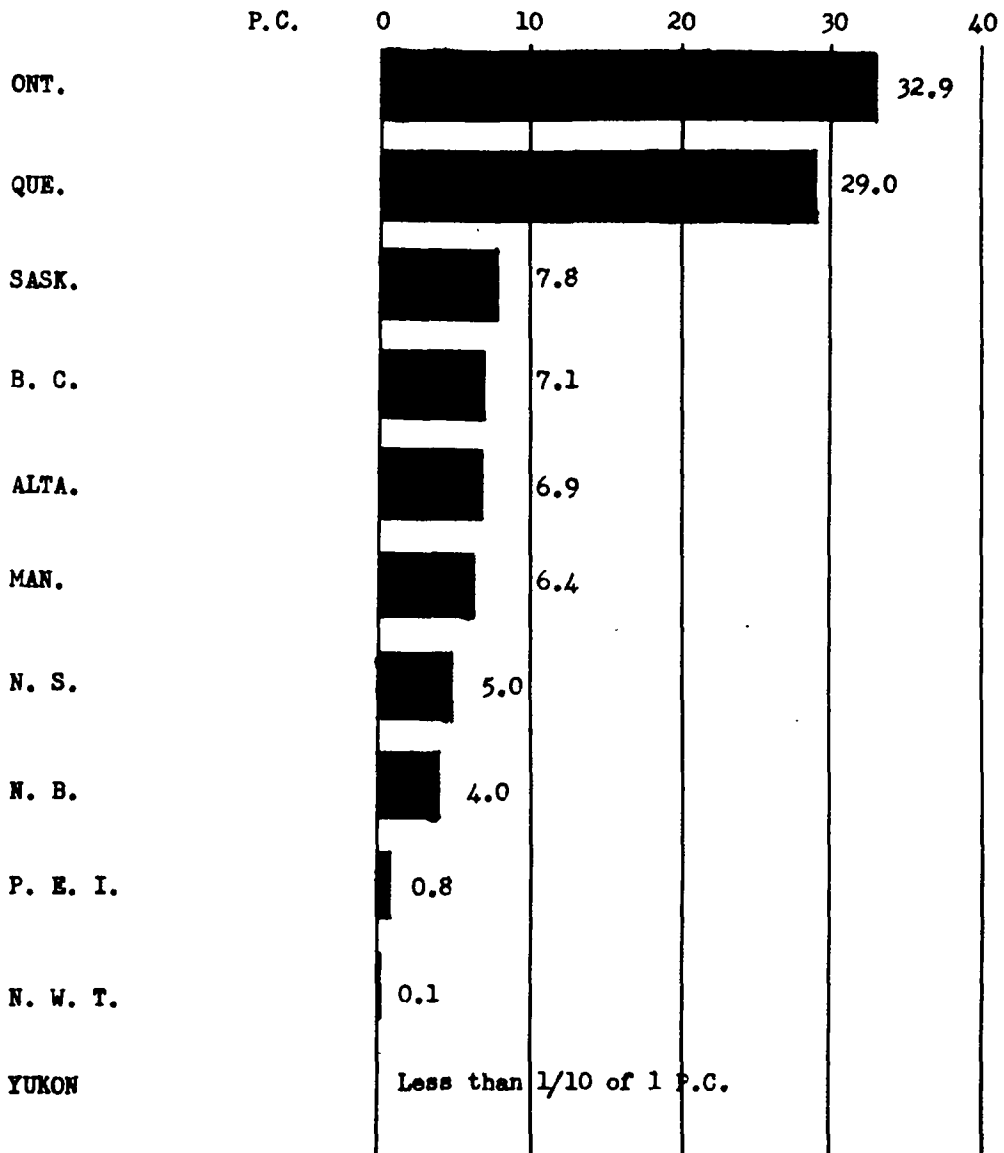
	<u>1871</u>	<u>1881</u>	<u>1891</u>	<u>1901</u>	<u>1911</u>	<u>1921</u>	<u>1931</u>	<u>1941</u>
Manitoba	25,228	62,260	152,506	252,211	461,394	610,118	700,139	729,744
Saskatchewan	-	-	-	91,279	492,432	757,510	921,785	895,992
Alberta	-	-	-	73,022	374,295	588,454	731,605	796,169
British Columbia	36,247	49,459	98,173	178,657	392,480	524,582	694,263	817,861
Ontario	1,620,851	1,926,922	2,114,321	2,182,947	2,527,292	2,933,662	3,431,683	3,787,655
Quebec	1,191,516	1,359,207	1,488,535	1,648,898	2,005,776	2,360,510	2,874,662	3,331,882
New Brunswick	285,594	321,233	321,263	351,120	351,889	387,876	408,219	457,401
Nova Scotia	387,800	440,572	450,396	459,574	492,338	523,837	512,846	577,962
Prince Edward Island	94,021	108,891	109,078	103,259	93,728	88,615	88,038	95,047
Yukon	-	-	-	27,219	8,512	4,157	4,230	4,914
Northwest Territories	40,000	56,446	98,967	20,129	6,507	8,143	9,316	12,028
Canada	3,689,257	4,324,810	4,833,239	5,371,315	7,206,643	8,787,949	10,376,786	11,506,655

16A

DISTRIBUTION OF POPULATION, CANADA, 1941



PERCENTAGE DISTRIBUTION OF TOTAL POPULATION
CANADA - 100



On the basis of the 1941 census the population per square mile of land area in Manitoba is 3.32, identical with that for Canada as a whole. In comparison, the corresponding figures for Saskatchewan, Alberta and Ontario are 3.77, 3.20 and 10.43 respectively.

For census purposes, Manitoba is divided into sixteen divisions. A table showing the population of Manitoba and the population per division and per square mile of land area is set out below. A map of Manitoba indicating the sub-divisions is also shown.

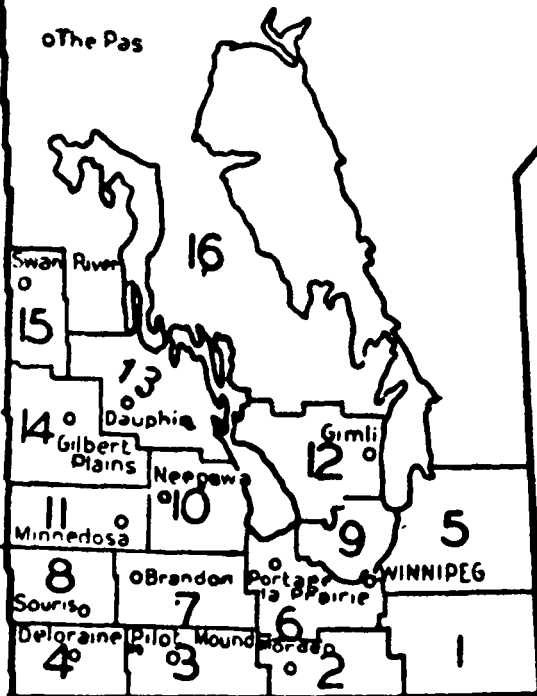
Population - 1941 Census

	<u>Per Area Noted</u>	<u>Per Square Mile</u>
Manitoba	729,744	3.32
Division 1	27,813	6.50
2	41,426	17.86
3	24,781	9.62
4	15,699	6.37
5	48,424	9.21
6	295,342	121.40
7	36,669	14.22
8	17,803	8.24
9	47,277	38.85
10	19,562	8.23
11	26,637	9.14
12	25,387	7.84
13	26,033	7.83
14	26,613	7.32
15	12,059	5.23
16	38,219	0.22

The most densely populated division in Manitoba is No. 6 which includes Winnipeg and Portage la Prairie. This division has about 40.5% of the total population and a population per square mile of 121.40. In comparison the population density per square mile of some areas in Ontario, such as York, Wentworth, Essex and Welland counties, is 1,078.85, 451.36, 246.44, and 242.47 respectively.

The 1941 census shows the population of Winnipeg as 221,960 and

CENSUS DIVISIONS
OF MANITOBA
1941



Greater Winnipeg which includes the City of St. Boniface and surrounding municipalities as 290,540. Various figures are quoted for Greater Winnipeg but these are, of course, dependent on the area included.

The following shows the population as of 1941 census, of cities, towns and villages with 1000 or more of population.

Greater Winnipeg (excluding St. Boniface)	272,383
St. Boniface	18,157
Brandon	17,383
Flin Flon	9,000
Portage la Prairie	7,187
Transcona	5,495
Selkirk	4,915
Dauphin	4,662
The Pas	3,181
Neepawa	2,292
Minnedosa	1,636
Virden	1,619
Carman	1,455
Morden	1,427
Souris	1,346
Beausejour	1,161
Swan River	1,129
Killarney	1,050
Stonewall	1,020

According to the 1941 census the rural and urban populations of Manitoba are 407,871 and 321,873 respectively. Of the former about 250,400 persons are on farms. A breakdown of the peoples by birth and by racial origin is shown, on the basis of the 1941 census.

By Birth

Canadian	536,158
Other British	83,003
United States	15,740
Europeans	93,098
Asiatics	1,310
Others	435

<u>By Racial Origin</u>	<u>Rural</u>	<u>Urban</u>	<u>Total</u>
British Isles	170,305	190,255	360,560
English	78,635	90,282	168,917
Irish	37,718	38,438	76,156
Scottish	51,443	58,176	109,619
Others	2,509	3,359	5,868
Other European	213,644	128,719	342,363
Ukrainian	58,837	30,925	89,762
French	35,863	17,133	52,996
German	25,822	15,657	41,479
Netherland	33,098	6,106	39,204
Polish	20,994	15,556	36,650
Scandinavian	19,605	13,015	32,620
Jewish	971	17,908	18,879
Belgian	4,566	2,149	6,715
Russian	3,894	2,677	6,571
Austrian	3,106	1,613	4,719
Czech and Slovak	2,598	1,104	3,702
Italian	422	2,060	2,482
Hungarian	1,307	1,111	2,418
Roumanian	1,007	431	1,438
Finnish	547	261	808
Other	1,007	1,013	2,020
Asiatic (Chinese)	366	1,422	1,788
Indian and Eskimo	23,556	1,477	25,033
Totals	407,871	321,873	729,744

LABOUR

As previously noted there are peoples of many nationalities in Manitoba, hence there exists a wide variety of skilled labour in almost all trades. The largest pool of labour is in Greater Winnipeg where in excess of 40% of the population and a large percentage of the manufacturing industries of Manitoba are located.

Labour is relatively stable and efficient and labour laws and rates compare favourably with that of the other provinces.

A table showing the gainfully occupied in Manitoba by groups based on the 1941 census follows. It indicates the distribution of labour in the various occupations.

Manitoba

Gainfully Occupied, 14 years of Age and
Over, by Groups & Sex Census
1941

<u>Group</u>	<u>Male</u>	<u>Female</u>	<u>Total</u>
Agriculture	90,697	1,533	92,130
Fishing, Trapping	5,140	53	5,193
Forestry and Logging	1,630	4	1,634
Mining, Quarrying	3,377	40	3,417
Manufacturing, products	29,106	5,211	34,317
Vegetable	2,650	523	3,173
Animal	3,239	505	3,744
Textile	1,616	2,601	4,217
Wood, Paper, Printing	4,851	821	5,672
Iron	13,498	433	13,931
Non-Ferrous Metal	1,024	66	1,090
Non-Metallic Minerals	611	35	646
Chemical	924	105	1,029
Miscellaneous	693	122	815
Electricity, Gas and Water	1,226	90	1,316
Construction	12,269	86	12,355
Transportation and Communications	20,394	1,436	21,830
Steam Railway	13,518	432	13,960
Electric Railway	1,135	66	1,201
Road Transportation	3,011	51	3,062
Water Transportation	200	11	211
Communications	1,059	745	1,804
Other	1,467	131	1,598
Trade	25,193	9,111	34,304
Retail	16,968	7,373	24,341
Wholesale	8,225	1,738	9,963
Finance, Insurance	4,235	1,998	6,233
Service	20,305	30,075	50,380
Professional	6,045	9,702	15,747
Public	7,318	1,453	8,771
Recreational	1,110	275	1,385
Business	615	189	804
Personal	5,217	18,456	23,673
Not Stated	2,133	195	2,328
Total Not Including Active Service	215,705	49,832	265,537
Total Including Active Service	240,399	49,912	290,311

According to a publication by the Department of Labour the rates of wages paid in 1940 in some trades are shown for Winnipeg and some other cities for comparison. The spread in the rates in the individual trades is due to the different types of work in the trades. The 1945 rates are in general 10 to 20 cents per hour higher.

Labour Wage Rates for 1940

<u>City</u>	<u>Building Trades</u>		<u>Metal Trades</u>	<u>Factory</u>	<u>Printing Trades</u>
	<u>Skilled</u>	<u>Unskilled</u>	<u>Skilled</u>	<u>Common Labour</u>	<u>Skilled</u>
	\$	\$	\$	\$	\$
	<u>Rate per Hr.</u>	<u>Rate per Hr.</u>	<u>Rate per Hr.</u>	<u>Rate per Hr.</u>	<u>Wages per Week</u>
Winnipeg	0.70 -1.10	0.425-0.50	0.40-0.80	0.35 -0.65	28.00-41.00
Brandon	0.65 -0.90	0.35 -0.40	-	-	-
Regina	0.65 -1.10	0.40	0.45-0.90	0.33 -0.40	29.00-38.00
Vancouver	0.625-1.10	0.45 -0.50	0.70-0.90	0.375-0.60	37.20-47.70
Toronto	0.80 -1.00	0.40 -0.50	0.50-0.95	0.30 -0.575	29.00-47.00
Montreal	0.70 -0.90	0.44	0.50-0.90	0.25 -0.44	32.00-47.00

The present weekly minimum rate in Manitoba for experienced workers, under the Minimum Wage Act, in factory, shop and office is as follows -

	<u>Cities</u>	<u>Rural</u>
Female	- 30 cents per hour	26 cents per hour
Male	- 35 cents per hour	-

EDUCATIONAL FACILITIES

Manitoba's schools and educational system compare favourably with those of other Canadian provinces. This applies to both urban centres and rural districts. The total enrolment in all classes of schools and colleges in Manitoba in proportion to the population is in the same order as that for Canada.

Elementary and Secondary Schools

Elementary and secondary schools are operated by the Provincial Department of Education. As of June 30th, 1945, 2,304 school districts had been formed, with 1,816 school districts in operation and 2,091 schools with a total of 4,245 departments. Secondary education is offered in 242 districts, of which 75 offer Grade XII, the equivalent of First Year University. Among the 2,091 schools were 53 collegiates and collegiate departments, 19 junior high schools, 54 with two room high schools and 131 with one room high schools. In the year 1944-45 of the total enrolment of 118,936 pupils, 98,840 were in elementary grades and 19,550 in secondary grades. The teachers employed numbered 4,353, of whom 680 were collegiate teachers.

The number of districts organized, the number of school-houses and departments in operation and the enrolment of pupils are shown for a number of selected years ending June 30th:

	School Districts Organized	Number of School-Houses	Number of School Dep'ts. in Operation	Enrolment
1929	2,200	2,011	4,166	150,517
1931	2,232	2,034	4,304	153,553
1934	2,251	2,048	4,290	147,253
1939	2,295	2,075	4,341	137,220
1941	2,301	2,088	4,362	131,562
1943	2,303	2,089	4,259	123,080
1945	2,304	2,091	4,254	118,390

In addition to the elementary and secondary schools, the Department of Education operates day classes for the deaf, correspondence and vocational courses, radio broadcasting, the Manitoba Technical Institute and Normal School.

Universities and Colleges

Manitoba is well supplied with schools of higher learning.

Institutions offering higher education are the following:

1. The University of Manitoba

2. Institutions affiliated with the University:

St. Boniface College (French-speaking Roman Catholic)
St. John's College (Anglican)
United College (United Church)
St. Paul's College (English-speaking Roman Catholic)
Brandon College (non-denominational)
Manitoba Law School

3. Institutions not affiliated with the University:

St. Andrew's College (Ukrainian)
The Mennonite Brethern College

The University maintains the following faculties and schools:

Faculty of Arts and Science
Faculty of Engineering and Architecture
Faculty of Medicine
Faculty of Agriculture
Faculty of Education
School of Home Economics
School of Social Work
School of Music
School of Architecture and Fine Arts
Course in Interior Decoration
Course in Nursing Education and Public Health Nursing
Courses in Post-Graduate Study

Bachelor and higher degrees are offered in practically all departments of Arts, Agriculture, Medicine, Pharmacy, Science, Engineering, etc. Only two years' instruction at present is offered in Mining, Mechanical and Chemical Engineering. Full courses are offered in Civil and Electrical Engineering.

In the 1944-45 term the enrolment of students in regular classes at the University proper was 2,693, with 368 in the Summer School and 1,443 in University Extension courses.

In the year 1945-46 enrolment was considerably increased owing to the return of veterans. The total enrolment in regular courses in the University and affiliated colleges was 5,545; in Extension courses, 2,699; in Summer School, 455; making a total in all courses of 8,699. There were also 79 students enrolled in Post-Graduate Studies.

In addition to the research facilities at the University, there are two Dominion Research Laboratories situated on the University grounds (Rust and Entomology Research) in which students may study and obtain credits towards higher degrees.

Business Colleges

There are several business colleges in Manitoba where various business courses are offered.

TRANSPORTATION

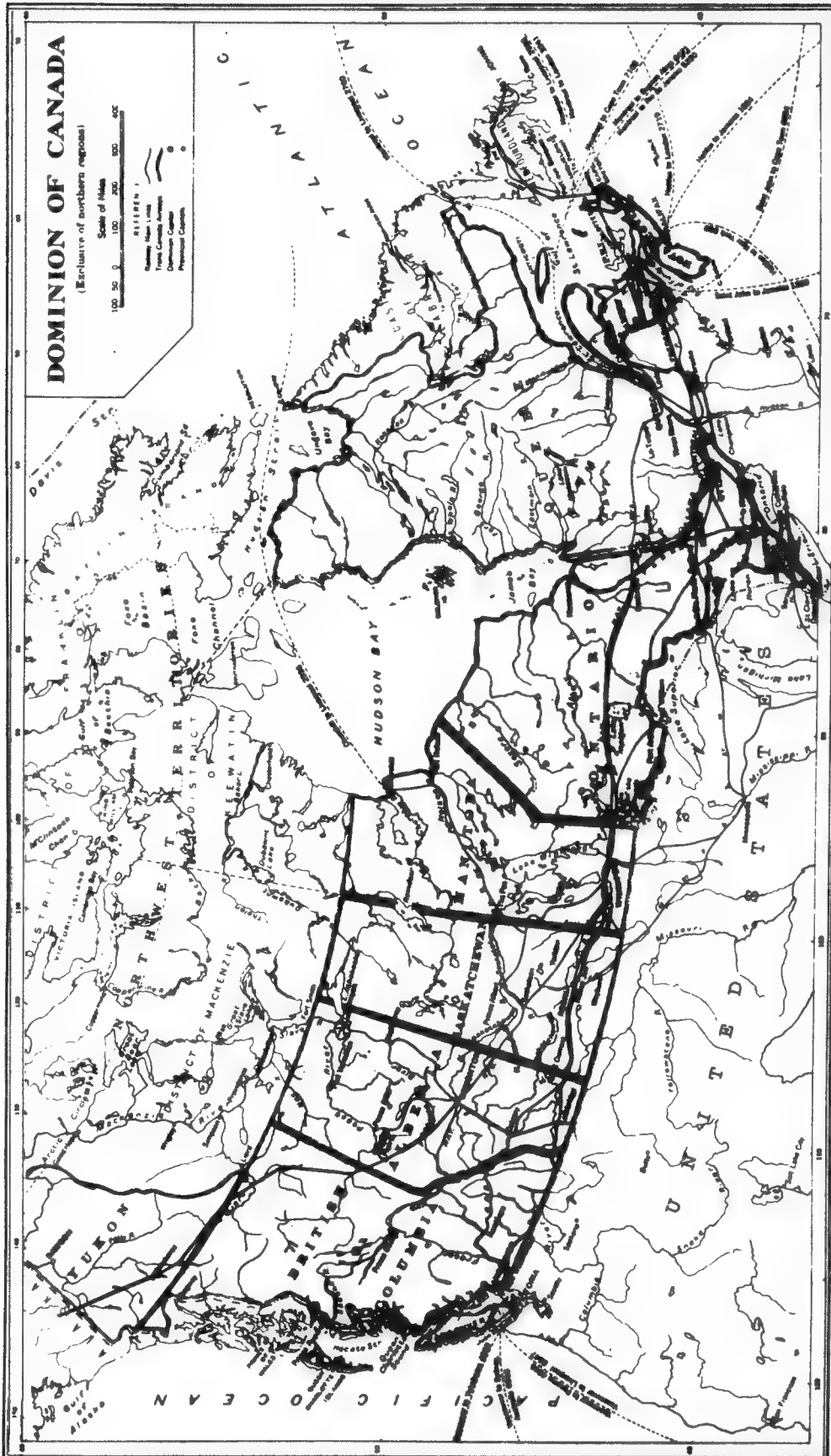
Manitoba is well supplied with transportation - railway, road and air - and with good connections to Eastern and Western Canada and to the United States. The northern or more unsettled portion of the province is served by the Hudson Bay Railway and air transport. The latter should prove a vital factor in its further development. Owing to the province's central position in Canada and its large export of agricultural products, the excellent transportation facilities to both Atlantic and Pacific coasts are of great importance. The attached map of Canada shows the main transcontinental rail and air lines and illustrates Manitoba's position in the transportation systems of Canada. There is also attached a chart of distances.

Steam Railways

The total steam railway mileage in Manitoba is some 4,837 miles and the Canadian total track mileage, 42,346 miles. These figures are exclusive of second track, industrial and yard track and sidings. Five railways operate in Manitoba with single track mileage as follows:

Canadian National Railways	2,466 miles
Canadian Pacific Railway	1,763 "
Greater Winnipeg Water District Railway	92 "
Hudson Bay Railway	510 "
Midland Railway	6 "
	<hr/>
	4,837 miles

As is indicated by the track mileage, rail traffic is largely over the two main lines, the Canadian National Railways, owned by the Dominion Government, and the Canadian Pacific Railway, a private corporation. Both systems maintain connections with the United States railway systems at the border south of Winnipeg.



DISTANCES BETWEEN PRINCIPAL POINTS IN CANADA.*

NOTE.—Generally, the distances given are the shortest by railway.

A knowledge of distances in miles between principal points constitutes very useful information in these days of wide travel, but when an attempt is made to compile such data difficulties are at once encountered. Railway distances are the logical choice, even though road distances are of increasing interest to a vast body of travellers by automobile and are a useful alternative. Railway distances represent usually the shortest practicable land distances between two points and even to-day the bulk of freight and passenger traffic is by rail. Again, distances by air (sometimes called 'bee-line' distances) are only useful in practice to those who travel by air. This is a growing phase of transportation, of course, but has not yet assumed such proportions that the ordinary reader is not able to obtain railway distances easily. Not a difficult matter to estimate air-line distances from a map made to convenient scale, whereas the ordinary reader is not able to obtain railway distances easily.

Even though it be decided to adopt railway distances as most useful, it is necessary to decide whether the most travelled route between two places or the shortest railway route should govern. In the tables given below, the distances between points are the shortest distances by railway and not necessarily the most travelled routes or the routes by which main trains travel. They are compiled principally from the railway time tables. The main table includes the capital of each province and some of the main shipping points chosen principally, but not altogether, by population; the subsidiary tables include distances of local importance. Included in the distances from Charlottetown is the distance from Borden to Cape Tormentine, over which the trains are transported by ferry; similarly, the train ferry distance between Mulgrave and Point Tupper is included in the distance from Halifax to Sydney. In the main table all the distances from Victoria include the distance travelled by boat from Victoria to Vancouver. However, wherever possible, railway distances only are used. In certain distances from Three Rivers and from Quebec it is possible, by the use of ferries, to travel by shorter routes than those given in the tables, the rail route only being taken in these cases.

Where boat routes are given, the best approximation of the distance travelled is used. The air-line distances used are not necessarily the straight-line distances between points, but are the distances over the routes usually travelled by aeroplanes in good weather.

Place	Halifax	Moncton	Charlottetown	Saint John	Fredericton	Quebec	Montreal	Sherbrooke	Three Rivers	Ottawa	Kingston	Toronto	Hamilton	London	Windsor	Fort William	Winnipeg	Brandon	Churchill	Regina	Saskatoon	Calgary	Edmonton	Vancouver	Victoria	Prince Rupert
Halifax	0																									
Moncton	189	0																								
Charlottetown	239	126	0																							
Saint John	278	160	213	0																						
Fredericton	292	104	230	67	0																					
Quebec	662	473	600	426	403	0																				
Montreal	747	558	684	476	454	169	0																			
Sherbrooke	646	457	583	373	353	127	101	0																		
Three Rivers	740	551	677	503	481	78	95	196	0																	
Ottawa	858	666	795	603	583	280	111	212	266	0																
Kingston	920	737	866	670	649	387	160	311	368	116	0															
Toronto	1081	897	1026	830	809	542	247	400	468	200	39	0														
Hamilton	1120	931	1057	849	827	542	373	474	550	247	160	39	0													
London	1196	1007	1133	925	903	618	449	550	644	362	276	115	80	0												
Windsor	1306	1117	1243	1035	1013	728	559	660	754	472	386	225	190	110	0											
Fort William	1716	1527	1653	1445	1423	1079	969	1070	1064	858	908	811	850	926	1036	0										
Winnipeg	2012	1823	1950	1776	1753	1350	1353	1454	1448	1242	1292	1207	1246	1322	1432	419	0									
Brandon	2146	1957	2084	1910	1887	1484	1486	1581	1581	1375	1426	1340	1379	1455	1565	552	133	0								
Churchill	2361	2172	2302	2133	2102	1702	1704	1802	1802	1590	1640	1554	1585	1671	1780	780	358	937	0							
Regina	2483	2294	2421	2247	2224	1821	1823	1924	1918	1712	1763	1677	1716	1792	1902	889	470	384	813	0						
Saskatoon	2834	2645	2772	2598	2575	2172	2174	2275	2269	2063	2113	2028	2067	2143	2253	1220	821	688	1217	467	404	0				
Calgary	2813	2624	2751	2577	2554	2151	2153	2254	2248	2042	2093	2008	2047	2123	2233	1220	801	715	1444	493	330	194	0			
Edmonton	3475	3286	3413	3239	3216	2813	2815	2916	2910	2704	2754	2670	2709	2785	2895	1882	1463	1330	1859	1108	1046	642	761	0		
Vancouver	3560	3371	3498	3324	3301	2898	2900	3001	2995	2789	2839	2755	2794	2870	2980	1967	1548	1415	1944	1193	1131	727	846	85	0	
Victoria	3769	3580	3707	3533	3510	3107	3109	3210	3205	2998	3049	2964	3003	3079	3189	2176	1757	1671	2100	1449	1287	1150	956	1158	1243	0

Place	Halifax	Moncton	Charlottetown	Saint John	Fredericton	Quebec	Montreal	Sherbrooke	Three Rivers	Ottawa	Kingston	Toronto	Hamilton	London	Windsor	Fort William	Winnipeg	Brandon	Churchill	Regina	Saskatoon	Calgary	Edmonton	Vancouver	Victoria	Prince Rupert
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Fort William	1716	1527	1653	1445	1423	1079	969	1070	1064	858	908	811	850	926	1036	0										
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Edmonton	3475	3286	3413	3239	3216	2813	2815	2916	2910	2704	2754	2670	2709	2785	2895	1882	1463	1330	1859	1108	1046	642	761	0		
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Victoria	3769	3580	3707	3533	3510	3107	3109	3210	3205	2998	3049	2964	3003	3079	3189	2176	1757	1671	2100	1449	1287	1150	956	1158	1243	0

* Prepared under the direction of F. H. Peters, Surveyor General and Chief, Hydrographic Service, Department of Mines and Resources, Ottawa.

The Greater Winnipeg Water District Railway which was built during the construction of the water supply aqueduct from Shoal Lake to the Greater Winnipeg area still serves the settlements adjacent to the line.

The Midland Railway Company, which is owned and controlled by the Great Northern Railway and the Northern Pacific Railway, operates over the Canadian National main line between Winnipeg and the international border where connections are made with parent companies' lines. For passenger service, it has the use of the Canadian National Union Station, Winnipeg.

The Hudson Bay Railway, which extends from The Pas in a generally northeasterly direction across the northern part of Manitoba to Churchill on the Hudson Bay, is owned by the Dominion Government and operated by the Canadian National Railways. The railway was originally built to provide an alternative and shorter route for the transportation of grain from the Prairie Provinces to Europe, through the Hudson Bay and Hudson Strait. To date only a comparatively small quantity of grain has been shipped by this route. Future use of the port depends on factors of safety, return cargoes, etc. The Hudson Bay Railway, aside from being the connecting link to the port of Churchill, is filling and should continue to fill a very important service in the development of Northern Manitoba, in particular, mineral development.

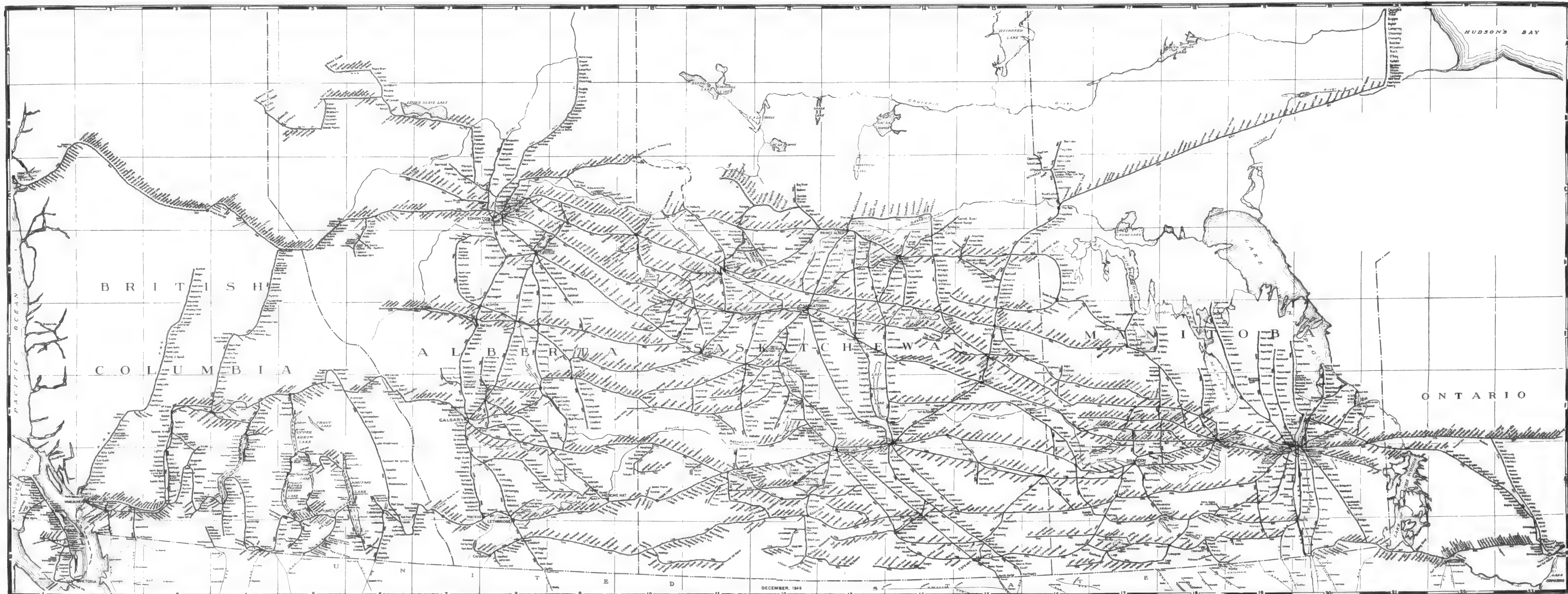
Winnipeg is one of the great Canadian railway centres. By geographical necessity the transcontinental lines must pass through Manitoba in a comparatively narrow gap between Lake Winnipeg and the international border. As a result all rail traffic between Eastern and Western Canada passes through Winnipeg. Branch railway lines

radiate out of Winnipeg, Portage La Prairie, Brandon and other points, resulting in a network of lines in the settled portion of the province such that only a relatively few people live in excess of ten or fifteen miles from a railway line. The extent of rail network in Manitoba and Western Canada and the connections to the United States are illustrated in the attached map. In addition to direct railway lines, an alternative rail and water route is available about seven months of the year with Eastern Canada and some points in the United States. This alternative route from Winnipeg is by rail to the twin ports of Fort William or Port Arthur (on Lake Superior about 419 miles from Winnipeg) and thence by water east. This latter route permits a substantial reduction in transportation costs. Completion of the St. Lawrence Waterways Project, allowing large ocean-going vessels to reach the ports at the head of the lakes, should result in further transportation savings for overseas shipments.

Rates charged by railways are a matter of great importance to the province, in particular the development of its industries. Canadian Railways are subject to the jurisdiction of the Board of Transport Commissioners for Canada in the matter of freight rates, passenger fares, construction, maintenance and operation. This legislation provides for appropriate regulations and services and rates to industry and the travelling public.

The opening of the Panama Canal in 1914 gave an alternative route to British Columbia to that of the transcontinental railway lines. As a result, on certain commodities, rates from Eastern Canada to Vancouver are lower than to Winnipeg and of the same order as from Winnipeg to British Columbia.

At present the equalization freight point between Vancouver



and Winnipeg is Calgary, on the Canadian Pacific Railway; and Granada, Alberta, on the Canadian National Railways. The first class freight rate between Calgary and Vancouver or Winnipeg is \$2.19 per 100 lbs., between Vancouver and Granada, \$2.30, and between Granada and Winnipeg, \$2.25.

By the combined rail-water route with Eastern Canada the equalization freight point between Winnipeg and Toronto or Montreal is Port Arthur. With all rail transportation the equalization freight point is extended further eastward into Northern Ontario. The first class all rail freight rate from Winnipeg to Port Arthur has a favourable differential of about 70 cents over that from Montreal or Toronto to Port Arthur.

The railway freight structure is complicated and occasionally seeming anomalies arise as the following examples indicate. Distributing rates from Winnipeg, Brandon, Portage La Prairie and Dauphin are about 15% less than from other smaller centres in Manitoba. The same rate applies in shipping lead from Tadanac, B.C. to Toronto as to Winnipeg, and the rate on zinc from Flin Flon to Niagara Falls, Ontario, is higher than to Montreal for export.

Manitoba is no longer purely an agricultural producer and her future industrial growth requires that the province should have a freight rate structure comparable with other parts of Canada. Existing freight rates on incoming finished goods have enabled some manufacturers in Manitoba to become established, particularly where heavy or bulky goods are involved. Rail transportation and freight charges are of vital importance to the economic welfare of the province. It consequently follows that material benefits will result from any improvement in transportation facilities or in freight rates.

* * * * *

Apart from the transportation services, the railways are a very important factor in the economic life of Manitoba, in particular in the Greater Winnipeg area where both transcontinental railways maintain regional headquarters and extensive yards and shops. Out of 20,250 persons employed by railways in Manitoba in 1944 (including shops) 15,700 were employed in Greater Winnipeg. Of this number, 5,000 were engaged in shop work. According to the 1941 census 20,566 persons (exclusive of railway shops) were employed in all types of transportation in the province, 13,950 being railway employees.

Road Transport

Highways constitute an integral part of passenger and freight transport. The accompanying map shows the highways system in Manitoba. In mileage of surfaced roads in Canada, Manitoba is only exceeded by Ontario, Quebec and British Columbia. The mileage of surfaced roads in Manitoba is shown in the following table in comparison with Saskatchewan, Alberta, Ontario and Canada as a whole.

Mileage of Surfaced Roads as of 1943

<u>Type of Road</u>	<u>Manitoba</u>	<u>Saskatchewan</u>	<u>Alberta</u>	<u>Ontario</u>	<u>Canada</u>
Concrete	31	-	-	2,128	2,525
Bituminous Pavement	6	-	81	2,098	5,180
Bituminous Surface	536	139	579	3,013	8,809
Gravel and Crushed Stone	<u>8,376</u>	<u>6,565</u>	<u>4,774</u>	<u>49,200</u>	<u>108,531</u>
	8,949	6,704	5,434	56,439	125,045

In addition to the surfaced roads in Manitoba there are 82,416 miles of earth roads of which 8,180 miles are improved.

MANITOBA ROAD MAP
FOLLOWING

In 1943 there were 93,494 registered motor vehicles in the province, about 6% of the Canadian total, classified as follows -

Passenger cars including taxi cabs	71,603
Commercial cars, trucks, etc.	21,037
Buses	106
Motor-cycles	<u>748</u>
	93,494

Truck units and four-wheel trailers, common carriers for transporting goods numbered 659 and 9 respectively. In addition 1,021 trucks and 13 trailers were operated by private carriers carrying their own goods (beyond 15 miles).

Because of its flexibility in service, motor transport offers keen competition to railways on certain classes of freight. The total freight carried in Manitoba in 1943 by motor transport amounted to 381,500 tons as against 6,025,500 tons loaded on railway cars at stations in Manitoba. The present maximum gross weight of any combination of motor vehicles permitted to use the roads in the province is 34,000 lbs. This would appear to preclude any extensive inroad by road transport on railway traffic on bulky and low value commodities.

In general, the use of motor transportation was restricted during the war. It should increase considerably as soon as motor vehicles become freely available. Popular demand for better highways, principally from rural sections, together with the part that good roads play in the encouragement of tourist traffic, will doubtless result in considerable improvement and extension of the highways of the province.

Aerial Transport

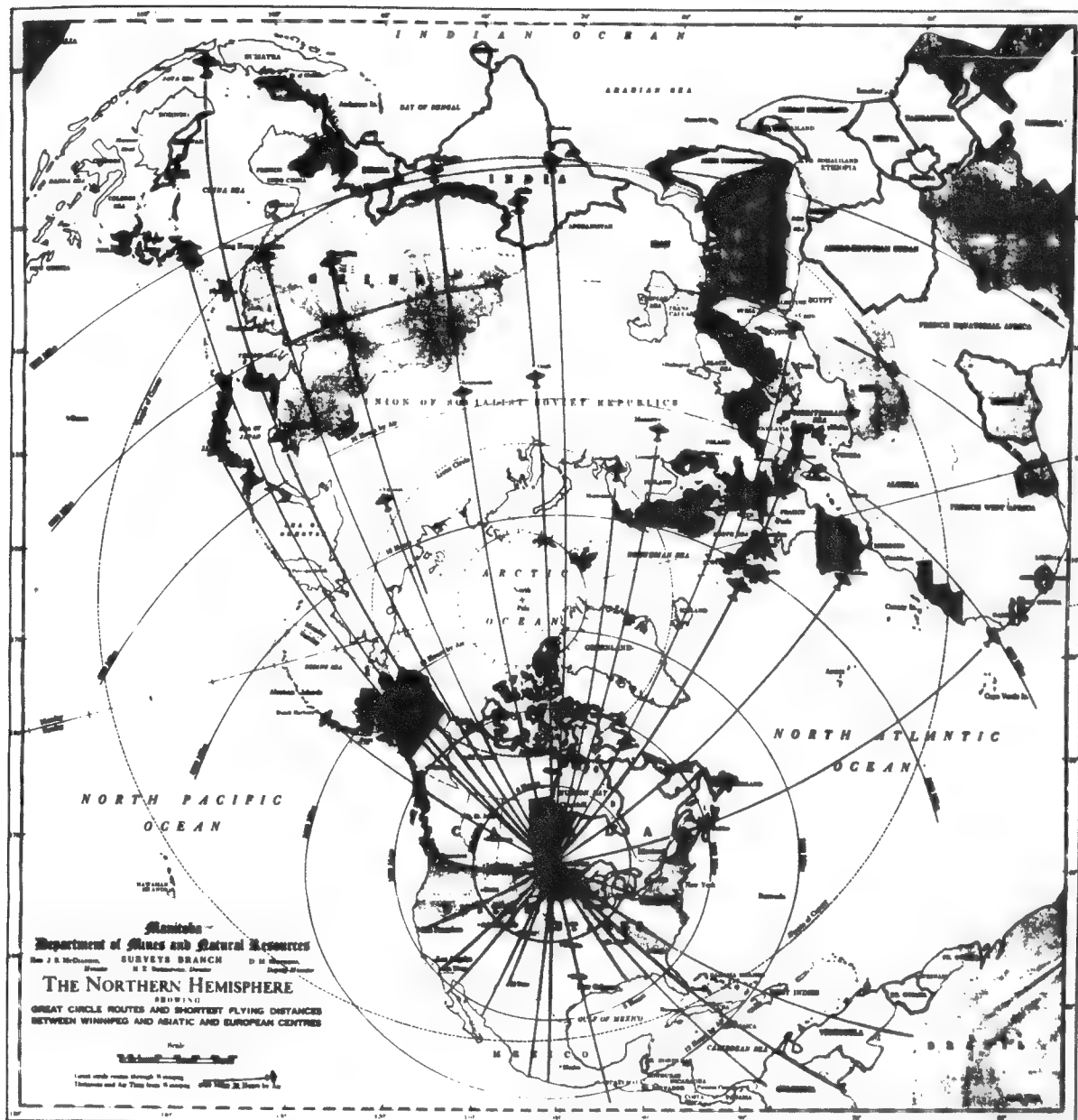
The geographical location of Manitoba gives it a strategic position of considerable importance in relation to air traffic. This is illustrated by a map of the northern hemisphere and a map of the airlines of North America.

In 1943 Manitoba, with 21% of the Canadian total, was the second largest contributor of freight in civil air traffic in Canada, as the following table shows:

<u>Civil Air Traffic in Canada</u> <u>By Province of Origin 1943</u>			
	<u>No. of Passengers</u>	<u>Freight - Lbs.</u>	<u>Mail - Lbs.</u>
Manitoba	13,744	2,767,946	471,095
Saskatchewan	10,369	233,460	171,682
Alberta	25,617	932,332	1,460,191
Ontario	61,101	4,524,213	1,082,941
Quebec	55,008	2,247,021	995,744
Canada	294,187	13,035,938	7,369,360

The two main commercial air lines operating in Manitoba are the Trans-Canada and the Canadian Pacific. A United States Company, Northwest Airlines, serves Winnipeg, through a connecting line from Fargo, North Dakota.

Trans-Canada Air Lines operate from Halifax to Victoria over a total line mileage of approximately 5,300 miles. Winnipeg is one of the principal points on the route, with the Operations Headquarters for Canada located at the Stevenson Aerodrome adjacent to the city. The aircraft engineering and maintenance shops built by the Company at this location are the most modern of their kind in Canada. The Stevenson Aerodrome is managed or controlled by the St. James-Winnipeg Airport Commission which was established by Provincial Statute in 1938. Plans for extensive additions to the aerodrome are under way to take care of





the large expected increase in air transportation at this point.

The Canadian Pacific Air Lines, which serve mainly the less accessible areas of Canada, have performed an excellent service in developing these areas, in particular, mining development. Without such service, transport would be practically restricted to canoes in summer and dog teams in winter. Mining development in Manitoba has been greatly assisted by this air line service. The general practice is to equip the planes with landing skis in winter and floats in summer. The territory served is of considerable importance to the industry and commerce of the province and will increase as the discovery and development of minerals and other resources arise.

The Canadian Government has set up facilities for the supervision of all air transportation in Canada and, through the Trans-Canada Air Lines which it owns, reserves the right to operate all transcontinental air services within the Dominion. This does not mean physical ownership of all lines by the Government, but unnecessary duplication of air lines and any undue influence by private interest to the detriment of the natural development of air facilities will not be allowed.

Just as railway transportation opened up Western Canada, so has aerial transport, since the late 1920's, made possible mineral exploration, discovery, mapping and development in the less accessible areas of Northern Canada. Air transport has played and will continue to play a major part in the mineral development of Northern Manitoba.

Water Transport

The movement of passengers and goods by water in Manitoba is very limited. Due to climate, ice conditions restrict the use of water transport on rivers and lakes to about seven months of each year. The lumber, pulp, mining and fishing industries are the principal users of the waterways. The total traffic on the Red River passing through

St. Andrews Locks near Winnipeg is less than 20,000 tons per year. It is doubtful that water transport can be considered other than as an auxiliary to other means of transportation in the province.

COMMUNICATIONS

Modern industry is largely dependent on speedy and accurate communication. Manitoba, as is Canada generally, is well served in Postal, Telegraph, Telephone and Radio Service.

Postal Service

Greater Winnipeg is located directly on the main trans-continental railways and air line routes and has, therefore, every advantage of speedy and frequent postal service from and to the east and west, and also southward into the United States. The Winnipeg Post Office has ample and adequate facilities to handle all classes of mail, parcels, and postal business on a large scale. It is the headquarters of a postal district comprising the territory between Port Arthur and Armstrong in Ontario, and Moose Jaw and Kamsack in Saskatchewan, with the international boundary to the south, and Swan River, Manitoba on the north. In this district are 150 rural mail delivery routes and 900 post offices. In 1944 there were 797 post offices in operation in the province, compared with 806 in 1939. Postal revenues in Manitoba in 1944 were \$5,806,282 compared with \$3,889,095 in 1939, of which upwards of 75% were contributed by the Greater Winnipeg area. With the increased equipment now available for air mail, letters mailed prior to 4 p.m. in Winnipeg are delivered with the first mail delivery the following morning in Montreal and Vancouver, and comparable speedy times apply to the principal parts of the American continent and to the British Isles. The frequency of mail

deliveries to the business section of Greater Winnipeg compares favourably with other Canadian cities. In the residential districts, there are two daily mail deliveries.

The advent of air transport makes possible rapid communication with the central and northern sections of the province previously only accessible by slowest modes of travel - by foot, dog teams in winter, and canoes and boats in summer. To the mining centres, air mail and transport services have been of great value and have without doubt been one factor in accelerating mineral development.

Telegraph

In Manitoba the telegraph systems are controlled by the Canadian National Telegraph Company and the Canadian Pacific Telegraphs Company.

The Canadian facilities, in proportion to the population, are among the most extensive in the world. Manitoba's pole line mileage of 4,213 miles and wire mileage of 31,695 amount to about 8% of the Canadian total. There are presently 334 offices which represent 7% of the Canadian total. The province, therefore, on a per capita basis, can be said to be well served with telegraph facilities.

Telephones

In the use of telephones, Manitoba ranks third in the Dominion, being exceeded only by Ontario and British Columbia. The number of telephones in 1943 per 100 of population in Ontario, British Columbia, Manitoba and Canada as a whole was 19.3, 18.7, 12.7 and 14.3 respectively. Sixty-eight percent of the 91,996 telephones in Manitoba were in the Greater Winnipeg area

The Manitoba Telephone System is owned by the Provincial Government and operates all telephone services in the province with the exception of seven small municipal and one privately owned telephone exchanges. All have connections with the Manitoba Telephone System.

In the Greater Winnipeg area the following rates apply -

Business - \$6.50 to \$7.15 per month, according to
type of receiver

Residence - \$2.50 to \$3.65 per month according to type
of service and receiver

Cash discount of 15 cents per line allowed for prompt payment

Radio

At present there are forty-three government radio communication stations in Manitoba, of which 34 are owned by the Provincial Government and nine by the Dominion. There are also 85 privately owned communication stations and 278 amateur experimental stations. Private receiving licenses in 1944 were estimated at 6.6 persons per set in Manitoba in comparison with 6.8 for Canada.

FUEL

Coal

No important coal deposits have been discovered in the province. Some thin bodies of lignite exist in the Turtle Mountain and Swan River areas. A small production near Deloraine (in the Turtle Mountain region) has averaged about 2,300 tons per year, mostly for local use. With this exception, all coal used in Manitoba is now brought in from Saskatchewan, Alberta, British Columbia and the United States. The anthracite coal and about 20.6% of the bituminous coal entering Manitoba in the year 1943 were from the United States.

The source and kinds of coal brought into Manitoba in 1943 are shown below:

	<u>Canadian Coal</u>	<u>Imported from U.S.A.</u>	<u>Total</u>
	<u>Tons</u>	<u>Tons</u>	<u>Tons</u>
Anthracite		16,336	16,336
Bituminous	349,100	90,293	439,393
Sub-bituminous	79,168		79,168
Lignite	<u>1,243,256</u>	<u>87</u>	<u>1,243,343</u>
Total	1,671,524	106,716	1,778,240

Of the Canadian coal, the mines in the Crow's Nest Pass district of British Columbia supplied 164,952 tons of bituminous coal, Alberta mines supplied about 184,148 tons of bituminous, 79,168 tons of sub-bituminous and 372,625 tons of lignite coal, and Saskatchewan mines 870,631 tons of lignite coal. The Saskatchewan mines supply about 50% of the total tonnage of coal consumed in Manitoba.

Prices to Industry

As of early 1946, contract prices to industrial consumers at Winnipeg for some types of coal were as follows:-

	Price per ton	B.t.u. Value
Elkhorn Stoker (U.S.A.)	\$13.25	14,100
Greenhill or Bellevue Stoker (Alberta)	8.65	12,000
Drumheller Stoker (Alberta)	6.85	9,950
Saskatchewan Stoker Lignite	3.95	7,430
Saskatchewan Slack	3.05	6,750

Oil

Although some rock formations that carry oil in other parts of the world exist in Manitoba, drilling results over the past ten years have failed to locate commercial quantities. Deep drilling for oil structures in parts of Southeastern Saskatchewan and neighbouring areas of North Dakota has indicated possibilities for oil accumulation, and the Post-War Reconstruction Committee of the Manitoba Government has recommended that the Government put down a deep test hole in the near future in Southwestern Manitoba.

Petroleum supplies, gasoline and fuel oil, obtained from Western Canadian refineries are derived from American and Alberta crude oils. The price to industrial users in Winnipeg is about 6¢ per gallon for Bunker C. oil of a B.t.u. value of about 186,000 per gallon, with some large contracts somewhat lower.

Gas

Apart from some minor occurrences, natural gas has not been discovered in commercial quantities in Manitoba. The availability of large natural gas reserves in Alberta and the probability of an extension of these fields into Western Saskatchewan may, however, materially change the fuel situation in Manitoba if natural gas transmission lines are constructed. Any such development would, undoubtedly, be of marked benefit to Manitoba.

Coke oven gas is produced in Winnipeg and in Brandon. The present production in Winnipeg amounts to about 2-3/4 million cubic feet a day and represents capacity production. The B.t.u. value of the gas per cu.ft. is 510. The gas is only available to operations which are continuous and without normal interruptions for at least eight hours per day for a minimum of twenty days per month for each and every month of the year, or where gas is a sole industrial fuel. The rates to industry are as follows:-

First 200,000 cubic feet per month	\$0.85 per 1000 cu.ft.
Next 200,000 " " " "	0.80 " 1000 " "
" 200,000 " " " "	0.75 " 1000 " "
" 200,000 " " " "	0.70 " 1000 " "
" 200,000 " " " "	0.65 " 1000 " "
All over 1,000,000 " " " "	0.60 " 1000 " "

Subject to a discount of 10 cents per 1,000 cu.ft. for prompt payment.

The present production capacity of gas in Brandon is approximately 75,000 cu. ft. per day. The gas has a B.t.u. value of 460 per 1,000 cu.ft. As the plant is outmoded, it is expected that it will be closed down as soon as conditions are favourable.

The commercial rate on 100,000 cu.ft. or more of gas per month is \$1.00 net per thousand cu.ft.

Wood

Wood is an important domestic fuel in Manitoba, but only a relatively small amount is used by industry. The main fuel wood is poplar. The price depends on the locality in which it is used and the kind of wood but, in recent years, has been from \$5.00 to \$8.00 per cord.

* * * * *

The cost of various fuels per million B.t.u., based on prices and B.t.u. values as given above, are set out below.

<u>Fuel</u>	<u>Unit Price</u>	<u>B.t.u. Value</u>	<u>Cost per Million B.t.u.</u>
<u>Coal</u>			
Elkhorn Stoker (U.S.A.)	\$13.25 per ton	14,100 per lb.	\$0.470
Greenhill or Bellevue Stoker (Alberta)	8.65 " "	12,000 " "	0.360
Drumheller Stoker (Alberta)	6.85 " "	9,950 " "	0.345
Lignite Stoker (Saskatchewan)	3.95 " "	7,430 " "	0.266
Lignite Slack (Saskatchewan)	3.05 " "	6,750 " "	0.226
<u>Fuel Oil</u>	0.06 per gal.	186,000 per gal.	0.323
<u>Coke Oven Gas</u>	0.75 basis per 1000 cu.ft.	510 per cu.ft.	1.470
<u>Wood</u>			
On basis of	5.00 per cord (3000 lbs.)	8,000 per lb.	0.208
" " "	8.00 " " " "	8,000 " "	0.333

POWER RESOURCES

Manitoba is richly endowed with water power resources, and substantial hydro-electric developments have been installed. The availability of low priced hydro-electric energy is one of the main industrial assets of the province.

About 97 - 98% of all electric power utilized in Manitoba is produced by hydro-electric development and is developed almost entirely on the Winnipeg River. The first development was at Pinawa, the plant being completed in 1906. This was followed by the development at Pointe du Bois in 1911, at Great Falls in 1922, and at Seven Sisters and Slave Falls in 1931. The only other hydro-electric plant in Manitoba is one of small capacity at God's Lake Gold Mines at Kanuchuan Rapids in the Island Lake River. This was completed in 1935. These plants have at present an installed capacity of 420,700 h.p. and an ultimate capacity of 599,700 h.p. In addition a large power plant at Island Falls, just inside the Saskatchewan border, north of Flin Flon, was developed to serve the mining industry at Flin Flon and Sherridon.

A table showing location and capacity of the water power developments serving Manitoba, is set out below.

<u>Owner</u>	<u>River</u>	<u>Location of Plant</u>	<u>Head in Ft.</u>	<u>Capacity in Horsepower</u>	
				<u>Installed (1945)</u>	<u>Ultimate</u>
City of Winnipeg	Winnipeg	Pointe du Bois	46	105,000	105,000
" " "	"	Slave Falls	30	48,000	96,000
Winnipeg Electric Company	"	Pinawa	42	37,800	to be abandoned
" " "	"	Seven Sisters	66	60,000	225,000
" " "	"	Great Falls	56	168,000	168,000
God's Lake Gold Mines	Island Lake	Kanuchuan	18	1,900	5,700
				420,700	599,700
Churchill River Power Co.	Churchill River	Island Falls, Sask.		90,835	

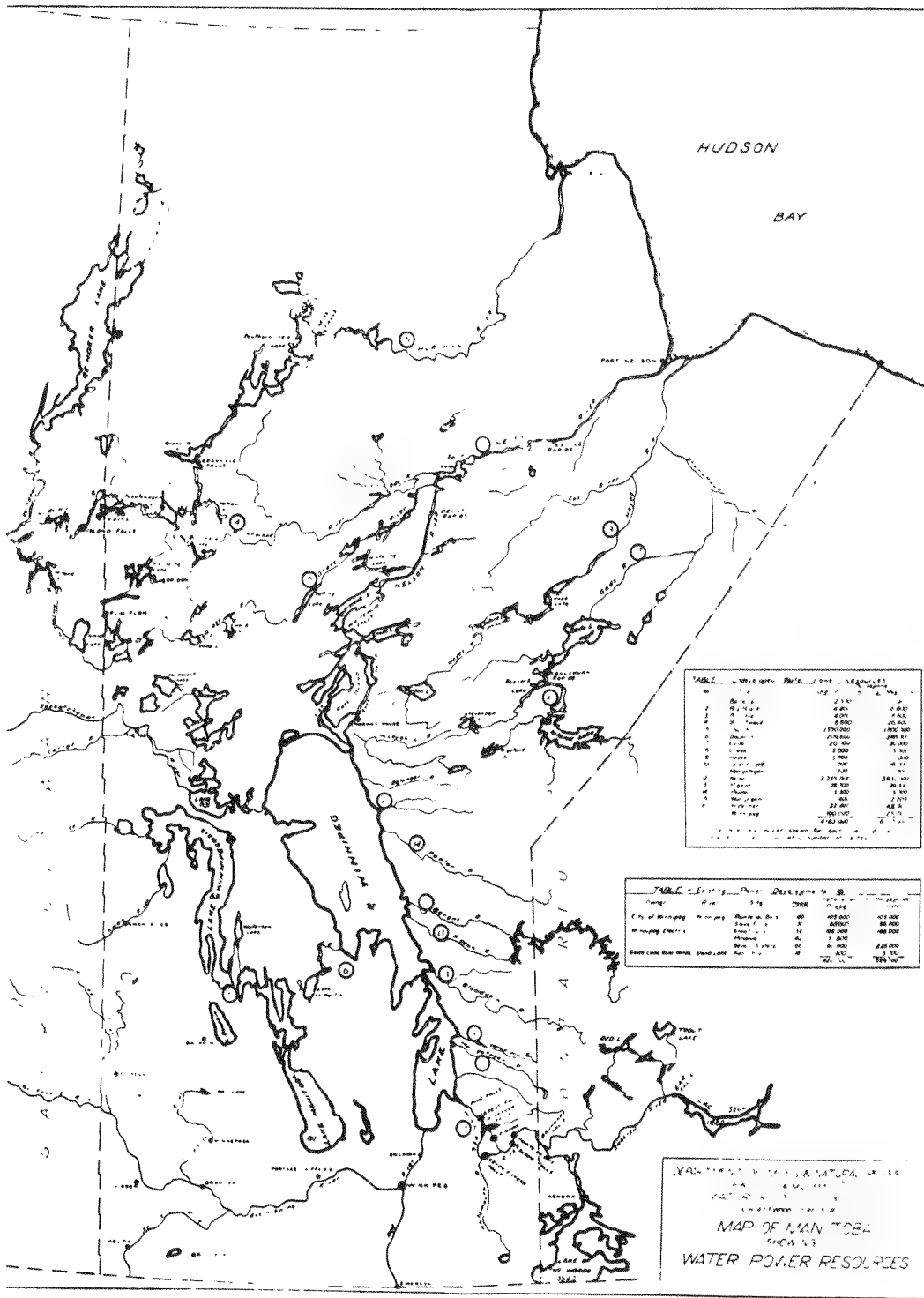
In addition to the power presently being utilized, it is estimated that there is some 4,000,000 undeveloped horsepower. A map showing the water power resources of Manitoba and a table showing the undeveloped resources of the province follow.

Undeveloped Water Power

<u>River</u>	<u>Capacity in Horsepower</u> <u>Ordinary Minimum Flow</u>
Berens	12,500
Big Black	4,400
Bloodvein	4,000
Burntwood	8,800
Churchill	1,500,000
Dauphin	209,600
God's	20,000
Grass	5,000
Hayes	5,700
Island Lake	11,000
Manigotan	1,200
Nelson	2,235,000
Pigeon	29,700
Poplar	3,300
Wanipigou	400
Waterhen	32,400
Winnipeg	100,000
	<u>4,183,000</u>

The City of Winnipeg Hydro Electric System, as shown above, owns the power plants at Pointe du Bois and Slave Falls. The present capacity of both plants is 153,000 h.p. During 1946 it is expected that a further 24,000 h.p. will be installed. The ultimate capacity of both plants is 201,000 h.p. The transmission of power from the power plants to Winnipeg is over six 66,000 volt transmission circuits. Two of the circuits are designed so that the voltage may be raised to 132,000 volts on completion of the development at Slave Falls.

A privately owned company, the Winnipeg Electric Company, owns power plants at Pinawa, Seven Sisters and Great Falls. The ultimate capacity of these plants is 393,000 h.p. of which 265,800 h.p. has been

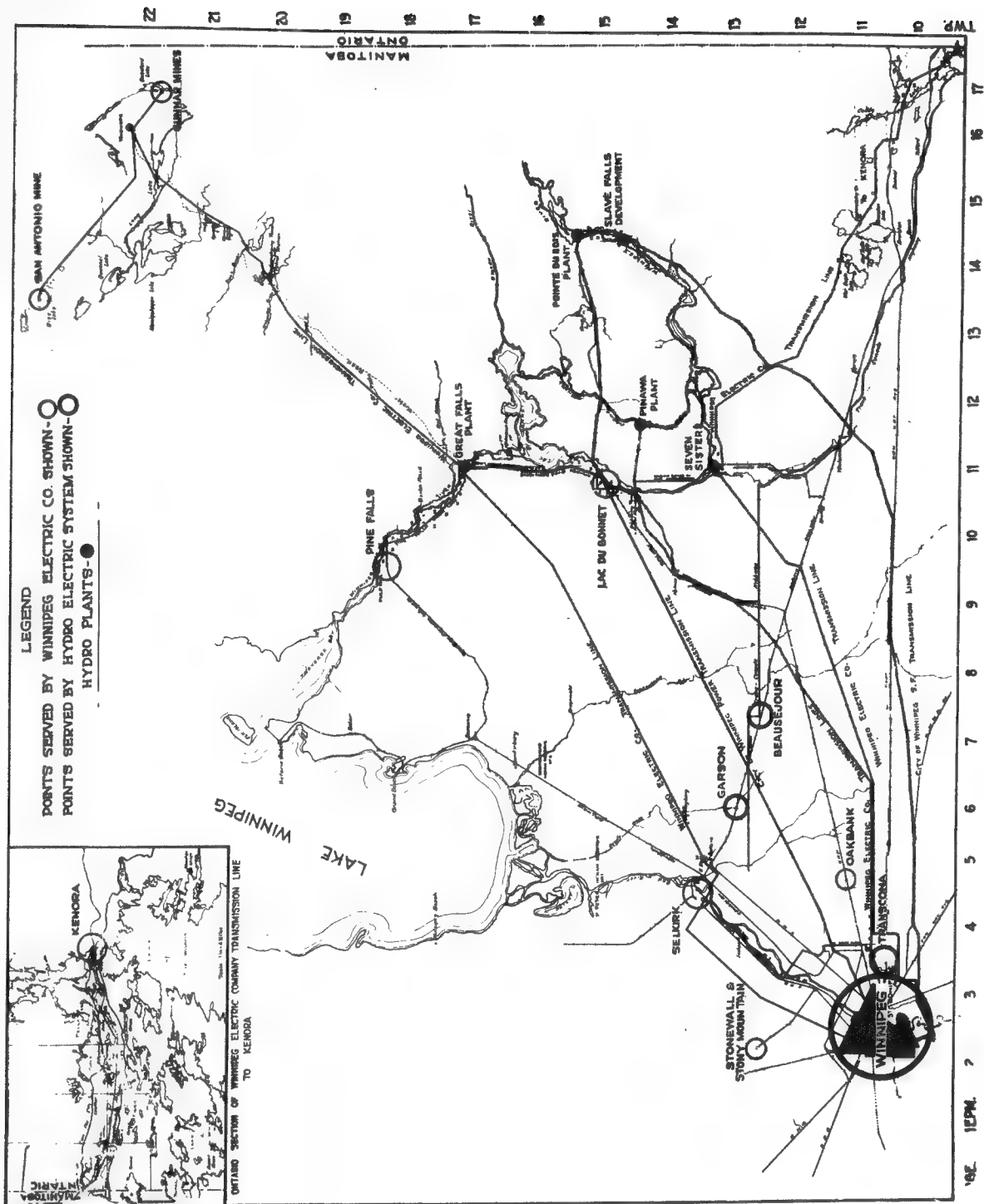


installed. It is expected that additional horsepower will be installed in the very near future. The transmission of power from the power plants to Winnipeg is over seven transmission circuits, five of 110,000 volts and two of 60,000 volts. In addition the Company has 2 circuits of 110,000 volts to Pine Falls, one of 60,000 volts to the mining district to the northeast of the power plants and one circuit of 110,000 volts to Kenora, Ontario.

The Winnipeg Electric Company and the Winnipeg Hydro Electric System supply power to Winnipeg and to some intervening points between the city and the power plants. The Winnipeg Electric Company supplies Pine Falls and some of the mines to the northeast of Great Falls. This Company also sells power to the Manitoba Power Commission and to pulp and paper mills at Kenora, Ontario.

A map indicating both of the above systems is attached.

The Manitoba Power Commission now serves points largely west, north and south of Winnipeg. The Commission's network consists of 3 main 66,000 volt lines radiating from the Fort Garry Terminal, two on steel towers forming a double circuit between Winnipeg, Portage la Prairie and Elm Creek. From Portage the steel tower line extends to Brandon and serves the area west of the city. From Winnipeg the third line runs direct to Elm Creek. From this point lower voltage lines (33,000) serve towns along No. 2 and No. 3 highways. In 1943 a new 66,000 volt line was completed between Oakville and Neepawa and from Neepawa a 33,000 line extends north to Dauphin to tie in with the 33,000 line at Minnedosa. This makes an alternate circuit which can serve Brandon and the western district. The Commission plan eventually to electrify 25,000 farms and the towns and villages situated within the territory. The map of the Commission's network and proposed extensions is shown. It is expected



that at least 30,000 h.p. will be required.

The program of installation was commenced in 1945, and completion is expected within a ten year period. The value of materials and electrical appliances required is very considerable.- in excess of \$25,000,000. Although the larger portion of the supplies required is not manufactured in Manitoba, nevertheless the electrical apparatus and supplies industry in the province should be stimulated, and encouragement given to the manufacture of equipment which, at present, is not produced. A survey of the industry conducted by the Industrial Development Board in 1942 indicated that supplies to the value of about \$8,000,000 might be produced in the province.

The water power resources are administered by the Department of Mines and Natural Resources under the provisions of the Water Power Act. No outright sale of water powers is permitted, but power sites may be leased to approved licensees for a definite term of years (standard term, 50 years) upon certain specified conditions. Provision is made for exercising an effective measure of control over the plants and the transmission of power. At the termination of the license the province may take possession of the property of the licensee by making compensation in accordance with the agreement specified in the license. The province may also take possession of the property of the licensee at any time after the expiration of thirty years from the completion of the initial development by paying a small bonus for the unexpired term of the license.

The following table shows the Manitoba production, imports and exports of hydro-electric power over a period of years.

<u>Year</u>	<u>Production</u>	<u>Imports</u>	<u>Exports</u>	
		From Island Falls, Sask.	To Ontario	to U.S.A.
	'000 K.W.H.	'000 K.W.H.	'000 K.W.H.	'000 K.W.H.
1930	956,171	35,066	0	0
1931	919,232	165,531	0	0
1932	899,675	187,355	0	0
1933	881,198	196,012	0	0
1934	977,707	205,674	0	0
1935	1,097,660	244,433	0	0
1936	1,305,231	269,667	0	147
1937	1,398,972	298,684	0	611
1938	1,367,026	319,850	83,280	838
1939	1,436,137	334,182	122,958	874
1940	1,379,765	363,065	103,008	1,015
1941	1,536,201	383,871	125,460	996
1942	1,663,470	412,166	143,762	1,030
1943	1,775,496	443,731	147,392	1,213
1944	1,787,770	423,481	115,369	1,361

Of the total power sold in Manitoba in 1941, domestic and residential requirements used 19%, commercial 8% and industrial 73%. Of the industrial load, the mining industry used 32.3%, the pulp and paper industry 28.5% and other industries 39.2%. Of the total power sold to industry in 1944, the mining industry used 40.7%, the pulp and paper industry 26.7% and other industries 32.6%.

Schedule of Power Rates
to Industry

The rates as set out below are in general applicable to industry in the vicinity of Greater Winnipeg. Rates to large consumers of electric power are subject to negotiation dependent on location and other factors.

Alternating Current (60 cycle)

Price per
Kilowatt Hour

First 50 hrs. monthly use of total connected load		3-1/3 cents
Next 50 hrs.	" " " " " "	2-1/2 "
Next 50 hrs.	" " " " " "	1.9 "
Next 50 hrs.	" " " " " "	1.4 "
Next 50 hrs.	" " " " " "	1.1 "
Excess of 250 hrs.	" " " " " "	0.8 "

Wholesale
Discounts

For the first \$100.00 or fraction thereof of monthly gross bill	no discount
" " 2nd " " " " " "	10%
" " 3rd " " " " " "	20%
" " 4th " " " " " "	30%
" " 5th " " " " " "	40%
" " next \$500.00 " " " " " "	50%
" in excess of \$1000.00 of monthly gross bill	60%

Contract term - one, three or five years.

Prompt payment discount.

One year contract	10%
Three " "	15%
Five " "	20%

Direct Current

Same as above but not subject to wholesale discount.

For points in Manitoba served by the Manitoba Power Commission
the power rate applying for motor loads of 2 h.p. or greater is as
follows -

First 30 hours' use of 80% of the total connected load established each month	5 cents per k.w.h.
For	
2nd 30 " " " 80% " " " " " " "	3-1/2 " " " " "
for additional energy used the same month	1 " " " " "
For prompt payment, discount 10%	
Minimum net monthly bill of \$1.50 per kilowatt on 80% of total connected load established each month.	

MARKETS

The data normally used to determine market potentials are broadly the following:

Population

Trade and Production

Purchasing Power

Purchasing Habits

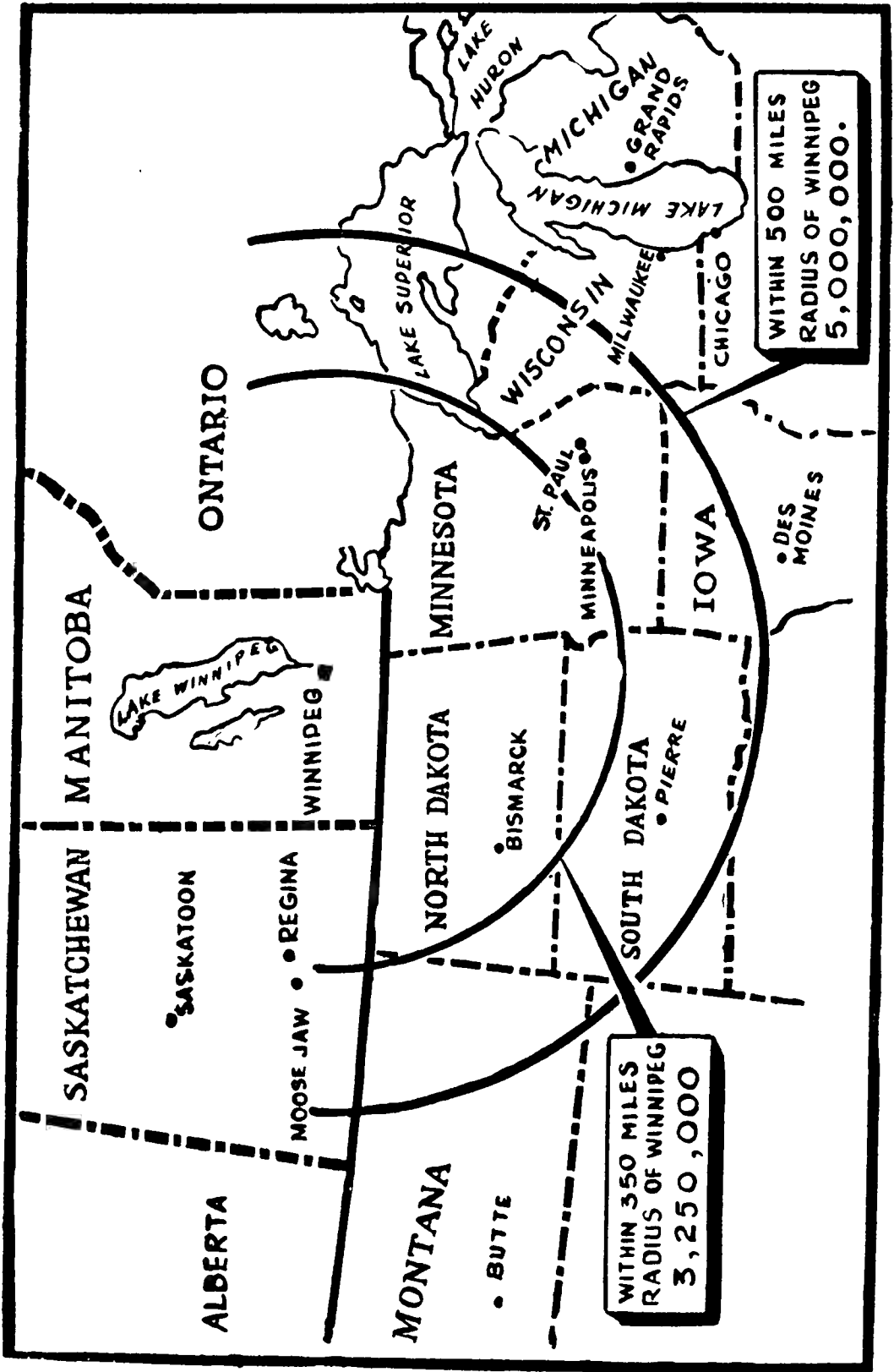
Population

The natural trade territory for goods manufactured and processed in Manitoba comprises the three Prairie Provinces - Manitoba, Saskatchewan and Alberta, and that part of Ontario west of Port Arthur. The population of this area represents about 21% of the Canadian population, about 2-1/2 millions, of which 60% are rural. Of the 2-1/2 million people, about 730,000 are in Manitoba and about 300,000 in Greater Winnipeg, the largest consuming centre in the Prairies.

The population of the three Prairie Provinces has remained almost static during the last decade. The increases in Manitoba and Alberta were off-set by decreases in Saskatchewan. Further substantial increases of population are dependent upon immigration which in turn is dependent upon national and provincial policies.

If, at some future time, there should be a general reduction of the tariffs between Canada and the United States, Manitoba's natural trade territory would be extended southward. A radius of 350 and 500 miles southward from Winnipeg as shown on the accompanying map would add a population of 3-1/4 million and 5 million respectively.

Some types of Manitoba's production, more particularly processed agricultural products, serve Canadian-wide and foreign markets. As a



MAP OF NATURAL TRADE TERRITORY

result of wartime conditions, Manitoba manufactured products have been marketed in wider territories than previously. The extent to which these newly established markets can be retained is still to be determined. In general, the majority of goods manufactured in the province should be able to compete in this natural trade area with those of Eastern Canada due to the freight advantage enjoyed. This geographical advantage is partially off-set in the western parts of the territory by the freight rates from Eastern Canada and Panama Canal rates. The equalization point of railway distribution freight rates from Winnipeg and Vancouver is in the western part of Alberta thus limiting competition from British Columbia. Increased competition within the natural trade territory may be anticipated from manufacturing production in Alberta and Saskatchewan.

Trade and Production

It is a comparatively simple matter to obtain the quantity and value of the majority of commodities consumed in Canada, as Canadian production, with some exceptions, and import and export figures are available through the Dominion Bureau of Statistics, Ottawa. However, interprovincial trade figures are not available and in the absence of such statistics, other methods must be used for estimating the markets within the province.

Railway Freight Traffic

The geographical position of Manitoba is such that practically all inward and outward freight is moved by railways. Reports of such freight movements have been published for recent years by the Dominion Bureau of Statistics. Points of destination of exports from the province and points of origin of imports are not shown, and the breakdown of some commodity groups is limited. However, a study of the quantity of materials and commodities loaded and unloaded in the province as shown

does present a broad picture of markets and volume of business, and, in some cases, such as coal, newsprint, etc., a very clear picture is obtained.

The volume of rail-borne products loaded and unloaded in Manitoba and the net exports or imports are shown for 1944 in the following pages. As the figures which are grouped according to the type of product and net imports and exports tell their own story, detailed comment is not deemed necessary. However, some general conclusions which may be drawn from these figures and other information are presented:

1. Agriculture is shown to be the dominant factor in the economy of the province. About 60% of all raw materials used in the manufacturing and processing industries of Manitoba are products of the farm. It will be noted, however, that a large tonnage of cattle, calves and hogs are imported, obviously from neighbouring provinces, for processing in the packing plants. It is also obvious that agricultural production, both raw and processed, is far in excess of domestic requirements, and that markets must be found outside the boundaries of the province.

2. The non-ferrous metals, copper and zinc, are exported elsewhere for further processing.

3. Large quantities of fuels are imported, as the province has, as yet, no known deposits of commercial value of coal, natural gas, oil.

4. Some other manufactured products, such as cement, lime products and newsprint, which are based on natural resources, are largely exported from the province.

Revenue Freight Carried by Canadian
Railways 1944

In Tons

<u>Agricultural Products Raw</u>	<u>Loaded in Manitoba</u>	<u>Unloaded in Manitoba</u>	<u>Net Export</u>
Wheat	1,844,905	360,219	1,484,686
Corn	4,938	2,529	2,409
Oats	538,690	212,755	325,935
Barley	829,396	268,087	561,309
Rye	31,587	209	31,378
Flax seed	41,353	8,657	32,696
Hay and straw	23,732	17,249	6,483
Potatoes	6,221	3,944	2,277
Other agricultural products, includes sugar beets and feed grain	155,131	97,598	57,533
	<u>3,475,953</u>	<u>971,247</u>	<u>2,504,706</u>
			<u>Net Import</u>
Other grain	896	1,648	752
Apples (fresh)	374	18,476	18,102
Other fruit (fresh)	495	34,041	33,546
Fresh Vegetables	5,840	11,952	6,112
	<u>7,605</u>	<u>66,117</u>	<u>58,512</u>
<u>Agricultural Products Processed</u>			<u>Net Export</u>
Flour	206,333	16,341	189,992
Other mill products	277,152	55,368	221,784
	<u>483,485</u>	<u>71,709</u>	<u>411,776</u>
			<u>Net Import</u>
Cotton	184	2,471	2,287

<u>Animal Products Raw</u>	<u>Loaded in Manitoba</u>	<u>Unloaded in Manitoba</u>	<u>Net Export</u>
Horses	7,859	6,058	1,801
Poultry	4,329	1,176	3,153
Wool	839	388	451
Hides and leather	13,741	729	13,012
	26,768	8,351	18,417

			<u>Net Import</u>
Cattle and calves	73,088	166,936	93,848
Sheep	4,853	6,765	1,912
Hogs	38,891	164,775	125,884
Eggs	5,281	12,336	7,055
	122,113	350,812	228,699

<u>Animal Products Processed</u>			<u>Net Export</u>
Dressed meats (fresh)	70,019	1,970	68,049
Dressed meats (cured, salted or canned)	128,939	2,805	126,134
Other packing house products (edible)	35,079	1,355	33,724
Butter	14,147	5,406	8,741
Other animal products (non-edible)	15,466	2,600	12,866
	263,650	14,136	249,514

			<u>Net Import</u>
Cheese	1,130	1,829	699

<u>Mine Products</u>	<u>Loaded in Manitoba</u>	<u>Unloaded in Manitoba</u>	<u>Net Export</u>
Ores, concentrates and base bullion	198,676	57,293	141,383
			<u>Net Import</u>
Anthracite coal	48	8,421	8,373
Asphalt, (natural by-product of petroleum)	682	14,570	13,888
Bituminous coal	179	449,018	448,839
Coke	1,297	21,871	20,574
Lignite coal	961	1,041,620	1,040,659
Iron ores		384	384
Salt	27,507	34,838	7,331
Sand and gravel	340,254	342,304	2,050
Stone, (crushed, ground or broken)	284,198	286,266	2,068
Slate, dimension or block stone	169 "	563	394
Other mine products	58,806	67,867	9,061
Crude petroleum		131,859	131,859
	714,101	2,399,581	1,685,480

<u>Forest Products Raw</u>	<u>Loaded in Manitoba</u>	<u>Unloaded in Manitoba</u>	<u>Net Export</u>
Pulpwood	76,500	76,420	80
			<u>Net Imports</u>
Cordwood and other firewood	173,274	210,948	37,674
<u>Forest Products Processed</u>			<u>Net Export</u>
Logs, posts, piling	8,249	7,897	352
Ties	5,254	3,253	2,001
	13,503	11,150	2,353
			<u>Net Import</u>
Lumber, timber, box, crate and cooperage material	58,179	188,122	129,943
Other forest products	3,165	6,128	2,963
	61,344	194,250	132,906
<u>Manufactures</u>			<u>Net Export</u>
Rails and fastenings	6,572	1,607	4,965
Cement	126,615	39,965	86,650
Lime and plaster	39,961	17,477	22,484
Newsprint paper	65,746	11,772	53,974
Fish (fresh, frozen, cured)	14,384	9,901	4,483
Automobiles, trucks and auto parts	10,986	9,863	1,123
	264,264	90,585	173,679
			<u>Net Import</u>
Gasolene	3,134	220,731	217,597
Petroleum, oils and other petroleum products (except asphalt and gasolene)	23,716	114,697	90,981
Sugar	1,934	14,168	12,234
Iron - pig and bloom	558	5,596	5,038

<u>Manufactures (cont'd.)</u>	<u>Loaded in Manitoba</u>	<u>Unloaded in Manitoba</u>	<u>Net Export</u>
Iron & Steel (Bar, sheet, structural, pipe)	35,407	55,081	19,674
Castings, machinery and boilers	3,823	5,380	1,557
Brick and artificial stone	1,911	16,239	14,328
Sewer pipe and drain tile	155	2,799	2,644
Agricultural implements and vehicles, other than autos	3,923	21,700	17,777
Furniture	5,779	6,693	914
Beverages	11,173	15,796	4,623
Fertilizers, all kinds	7,847	10,444	2,597
Other paper	2,527	11,753	9,226
Paper board, pulpboard and wall board (paper)	2,306	20,794	18,488
Wood pulp	2,406	6,710	4,304
Canned goods (all canned food products except meats)	10,739	44,489	33,750
Other manufactures and miscellaneous	304,453	354,212	49,759
	<u>421,791</u>	<u>927,282</u>	<u>505,491</u>
<u>Miscellaneous</u>			<u>Net Export</u>
Household goods and settlers effects	4,215	3,639	576
Merchandise (all L.C.L. freight)	205,700	163,418	42,282
	<u>209,915</u>	<u>167,057</u>	<u>42,858</u>

Revenue Freight Carried
by Canadian Railways
1944
In Tons

SUMMARY

	<u>Net</u>	
	<u>Export</u>	<u>Import</u>
<u>Agricultural Products</u>		
Raw	2,446,194	
Processed	409,489	
<u>Animal Products</u>		
Raw		210,282
Processed	248,815	
<u>Mine Products</u>		1,544,097
<u>Forest Products</u>		
Raw		37,594
Processed		130,553
<u>Manufactures</u>		331,812
<u>Miscellaneous</u>	42,858	
Totals	3,147,356	2,254,338
Net Export	<u>893,018</u>	

Production

The gross and net value of production, the percentage of the Canadian total and the capita production of each province is shown in the following table. Net production represents the total or gross value less the cost of materials, fuel, purchased electricity and process supplies consumed in the production process. Manitoba ranks sixth by provinces in value of production and has a net capita production of about 76% of that of Canada.

	<u>Gross Value of Production</u>		<u>Percentage of Canadian Total</u>		<u>Gross Production Per Capita</u>	
	<u>1939</u>	<u>1942</u>	<u>1939</u>	<u>1942</u>	<u>1939</u>	<u>1942</u>
	\$				\$	
Prince Edward Island	22,705,070	36,611,034	0.4	0.3	238.9	385.4
Nova Scotia	181,518,282	317,004,819	3.1	2.8	310.6	548.4
New Brunswick	138,843,805	228,822,689	2.4	2.0	305.5	500.3
Quebec	1,569,855,174	3,198,620,365	27.0	27.8	471.7	960.0
Ontario	2,519,670,167	5,005,454,849	43.3	43.5	665.2	1321.4
Manitoba	277,843,898	515,521,633	4.8	4.5	380.6	705.8
Saskatchewan	328,720,576	666,522,078	5.6	5.8	366.9	743.9
Alberta	331,044,275	658,072,397	5.6	5.7	415.9	826.7
British Columbia	442,589,832	863,796,680	7.6	7.5	541.1	1056.0
Yukon & N.W.T.	8,990,169	11,166,898	0.2	0.1	529.0	657.0
	<u>5,821,781,248</u>	<u>11,501,593,442</u>	<u>100.0</u>	<u>100.0</u>	<u>506.2</u>	<u>1000.1</u>

	<u>Net Value of Production</u>		<u>Percentage of Canadian Total</u>		<u>Net Production Per Capita</u>	
	<u>1939</u>	<u>1942</u>	<u>1939</u>	<u>1942</u>	<u>1939</u>	<u>1942</u>
Prince Edward Island	12,748,646	21,404,746	0.4	0.3	134.2	237.8
Nova Scotia	103,459,716	175,667,076	3.2	2.8	186.7	297.2
New Brunswick	75,136,314	128,162,880	2.3	2.1	166.6	276.2
Quebec	830,013,220	1,665,325,431	25.8	26.6	258.6	491.2
Ontario	1,354,389,317	2,529,183,058	42.0	40.4	361.0	651.2
Manitoba	149,256,552	295,240,285	4.6	4.7	205.3	407.8
Saskatchewan	225,576,383	494,011,113	7.0	7.9	237.7	582.6
Alberta	219,734,377	439,812,709	6.8	7.0	278.5	566.8
British Columbia	246,612,581	500,027,020	7.7	8.0	318.6	574.7
Yukon & N.W.T.	7,029,467	9,630,295	0.2	0.2	502.1	566.5
	<u>3,223,956,573</u>	<u>6,258,464,613</u>	<u>100.0</u>	<u>100.0</u>	<u>284.9</u>	<u>537.0</u>

The breakdown by industrial groups of the total gross and net production of Manitoba and Canada and comparative information are set out in the following tables for 1939 and 1942. It may be noted here that certain duplications in the statistics as published occur in extractive and manufacturing industries. For instance, the figures on forestry include sawmills and pulp mills and those on mining, smelting and refining. Manufacturing figures shown are those after the deduction of such duplications.

Again the dominant position that agriculture holds in the economy of the province is clearly illustrated. In 1939 the net value of agricultural production represented 44.7% of the total production and in 1942, 53% as compared to 26.2% and 27.0% respectively for Canada. Manufacturing net production value in the province represented 28.6% of the total in 1939 and 30.3% in 1942. As previously noted a large percentage of the manufacturing production is based on agricultural products.

The combined net value of the production of agriculture and manufacturing in Manitoba represented 73.3% of the total in 1939 and 83.3% in 1942. The corresponding percentages for Canada were 64.7 and 73.1 respectively. While the percentage ratio of these two branches of industry increased, the others with the exception of fisheries and trapping decreased.

The wholesale price level of commodities in Canada was 20% higher in 1942 than in 1939. Although the increase was unequally divided between various sources of production, this was insufficient to distort materially the relationship of the percentage figures.

M A N I T O B A

C A N A D A

	Gross Value of Production				Gross Value of Production						
	Amount \$	Percentage of Total	Percentage of Canadian Production		Amount \$	Percentage of Total	Percentage of Total				
			1939	1942				1939	1942		
Agriculture	96,517,000	34.7	1942	36.7	1939	7.9	8.9	1,224,616,000	2,136,529,000	21.1	18.6
Forestry	5,820,349	2.1	1942	1.7	1939	1.2	1.1	466,032,290	763,988,245	8.0	6.6
Fisheries	1,655,273	0.6	1942	0.7	1939	3.1	3.5	52,883,913	103,118,177	0.9	0.9
Trapping	583,449	0.2	1942	0.5	1939	7.0	10.9	7,919,412	23,801,213	0.1	0.2
Mining	28,619,359	10.3	1942	4.2	1939	4.3	2.3	663,342,816	946,021,397	11.4	8.2
Electric Power	8,467,519	3.1	1942	2.0	1939	5.6	4.8	151,880,969	203,835,365	2.6	1.8
Construction	14,848,706	5.3	1942	4.3	1939	4.0	3.5	373,203,680	635,649,570	6.4	5.5
Custom & Repair	11,134,284	4.0	1942	2.4	1939	6.7	6.0	163,259,301	205,364,000	2.8	1.8
Manufactures	110,197,957	39.7	1942	47.5	1939	4.0	3.7	2,718,642,867	6,483,286,475	46.7	56.4
TOTAL	\$277,843,896	100.0%	\$515,521,633	100.0%	4.8%	4.5%	\$5,821,781,248	\$11,501,593,442	100.0%	100.0%	

M A N I T O B A

C A N A D A

	Net Value of Production			Percentage of Total	Percentage of Canadian Production		
	Amount \$	1942	1939	1942	1939	1942	1939
Agriculture	66,687,260	156,560,000	44.7	53.0	7.8	9.2	
Forestry	3,717,261	5,577,879	2.5	1.9	1.4	1.3	
Fisheries	1,655,273	3,577,616	1.1	1.3	4.8	5.5	
Trapping	583,449	2,596,436	0.4	0.9	7.4	10.9	
Mining	12,401,404	9,508,569	8.3	3.2	3.2	1.9	
Electric Power	8,393,044	9,832,040	5.6	3.3	5.6	4.9	
Construction	6,569,460	9,545,292	4.4	3.2	3.6	3.1	
Custom & Repair	6,591,692	8,438,000	4.4	2.9	6.8	6.0	
Manufactures	42,657,709	89,604,453	28.6	30.3	3.4	3.2	

	Net Value of Production			Percentage of Total
	Amount \$	1939	1942	1939
	846,066,000	1,691,540,000	26.2	27.0
	271,723,416	429,079,260	8.4	6.9
	34,378,681	64,821,702	1.1	1.0
	7,919,412	23,801,213	0.3	0.4
	393,232,044	514,109,951	12.2	8.2
	149,863,892	200,345,240	4.6	3.2
	183,706,338	310,917,190	5.7	5.0
	96,652,386	139,349,000	3.0	2.2
	1,240,414,404	2,884,501,057	38.5	46.1

TOTAL	\$149,256,552	\$295,240,285	100.0%	100.0%	4.6%	4.7%	\$3,223,956,573	\$6,258,464,613	100.0%	100.0%
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Manufacturing Production

Although per capita production figures are not as satisfactory as consumption data they do offer valuable information in estimating markets for manufactured products when compared with those for Canada.

Gross manufacturing production values under ten groups of products for Manitoba and Canada for the year 1939, which is taken as a basic year, follow. The percentage values of each group to the total are also shown and the capita production values for Manitoba, Saskatchewan and Alberta combined, the Prairies as a whole and Canada.

	Value of Production		Percentage of Total Manufacturing Production		Production Value per Capita			
	Manitoba	Canada	Manitoba	Canada	Manitoba	Sask. & Alberta	Prairies	Canada
Food:	\$53,401,507	\$784,072,722	39.76%	22.57%	73.15	45.44	53.78	68.17
Breadstuffs	12,006,274	248,187,281	8.94	7.14	16.45	15.79	15.97	21.57
Fish	-	28,816,536	-	0.83	-	-	-	2.50
Fruit & Vegetables	571,667	55,164,957	0.43	1.60	0.78	0.22	0.39	4.79
Meats	27,273,202	187,692,934	20.31	5.38	37.36	15.38	22.01	16.32
Milk Products	9,810,277	143,583,643	7.30	4.14	13.44	10.09	11.09	12.48
Sugar	-	49,896,763	-	1.45	-	2.48	1.74	4.34
Miscellaneous	3,740,087	70,730,608	2.78	2.03	5.12	1.48	2.58	6.17
Drink and Tobacco:	4,874,403	164,812,439	3.63	4.74	6.68	3.78	4.65	14.33
Beverages, Alcoholic	2,709,508	62,434,345	2.02	1.80	3.71	2.75	3.04	5.42
Beverages, Other	2,164,895	32,784,708	1.61	0.94	2.97	1.03	1.61	2.86
Tobacco	-	69,593,386	-	2.00	-	-	-	6.05
Clothing:	10,132,248	275,567,762	7.54	7.93	13.88	1.07	4.94	23.97
Boots & Shoes,leather	370,242	40,925,513	0.28	1.18	0.51	-	0.15	3.55
Fur Goods	1,701,984	19,961,526	1.27	0.57	2.34	0.12	0.78	1.72
Garments and Personal Furnishings	6,855,913	137,252,680	5.11	3.95	9.39	0.87	3.44	11.93
Gloves and Mittens	355,299	4,638,839	0.25	0.13	0.48	-	0.15	0.40
Hats and Caps	482,248	13,770,216	0.36	0.40	0.66	-	0.20	1.19
Knitted Goods	366,562	57,669,805	0.27	1.66	0.50	0.08	0.22	5.07
Waterproofs	-	1,349,183	-	0.04	-	-	-	0.11
Personal Utility:	1,351,126	57,043,684	1.01	1.64	1.85	0.36	0.81	4.98
Jewellery & Time Pieces	35,000	14,706,511	0.03	0.42	0.05	-	0.01	1.28
Recreation Supplies	5,000	4,151,091	0.00	0.12	0.00	0.00	0.00	0.38
Personal Utility	1,311,126	38,186,082	0.98	1.10	1.80	0.36	0.80	3.32
House Furnishings:	2,779,454	88,800,804	2.07	2.56	3.81	0.25	1.32	7.72
Books and Stationery:	7,130,399	144,288,052	5.30	4.15	9.76	3.00	5.04	12.54
Vehicles and Vessels:	14,617,043	266,089,493	10.90	7.66	20.02	16.95	17.91	23.12
Producer Materials:	34,657,607	1,130,510,177	25.80	32.54	47.47	14.52	24.44	98.30
Farm Materials	1,478,099	13,165,164	1.10	0.38	2.02	2.54	2.39	1.14
Manufacturing Materials	21,878,654	843,494,724	16.28	24.28	29.97	8.46	14.94	73.35
Building Materials	5,109,210	204,610,338	3.80	5.89	7.00	3.29	4.40	17.79
General Materials	6,191,644	69,239,951	4.62	1.99	8.48	0.23	2.71	6.02
Industrial Equipment:	1,929,160	528,678,421	1.44	15.21	2.65	0.33	1.03	45.97
Farming	522,773	16,226,718	0.39	0.47	0.72	0.03	0.24	1.41
Manufacturing	50,000	49,872,608	0.04	1.43	0.07	-	0.02	4.34
Treading	282,127	6,221,444	0.21	0.18	0.39	0.06	0.16	0.54
Service	399,260	38,364,468	0.30	1.10	0.55	-	0.17	3.34
Light, Heat and Power	375,000	242,344,127	0.28	6.97	0.51	-	0.15	21.07
General	300,000	175,649,056	0.22	5.06	0.41	0.24	0.29	15.27
Miscellaneous:	3,420,648	34,919,974	2.55	1.00	4.69	1.84	2.68	3.04
TOTAL -	\$134,293,595	\$3,474,783,528	100.00%	100.00%	183.96	87.54	116.60	302.15

A study of the foregoing comparative production figures reveals significant factors.

It is clearly shown that manufacturing production in Manitoba is fairly diversified but that balance is lacking. Some lines in consumer goods are being produced beyond the saturation point of the market in the province and others, in almost the same category, are entirely unrepresented.

The proportion of production of consumer goods to the total production ranks high in Manitoba in comparison to that in Canada, 63% to about 45% in the years as shown. This is due entirely to the high proportion of production based on farm products. In excess of 30% of the 63% was accounted for by processed meats. Export markets for meats and flour products are essential and will be reviewed in the industrial section of the report. In the production of producer materials and industrial equipment, the province is deficient. Such products may be described as those used by manufacturing plants, agricultural producers or business concerns, either in their final product or to facilitate the production and distribution of consumer goods. This deficiency should be overcome in some degree as production of consumer goods and the demand for equipment of producer materials increase. The lack of primary products in certain fields also limits the development of this type of manufacturing.

It is to be noted that Manitoba's manufacturing production value in 1939 per person was 60% of that of Canada, while that of Alberta and Saskatchewan combined was 29%. During the war years the Manitoba percentage has varied from about 55 to 61 and Alberta and Saskatchewan combined from 26 to 31.

An increase in the production of consumer goods in Manitoba

would seem to present the most favourable and immediate opportunity for industrial expansion. In general, consumer goods are those used by the ultimate or household consumer for his own immediate needs and are purchased by him from retail stores or other types of retail outlets. Recommendations to expand the production of consumer goods occasionally draw criticisms on the ground that the development is bound to be at the expense of some other area's production and welfare. Such an argument assumes that the market for any and all products is fixed and static and that new centres of production merely redistribute the shares of a constant total. It should be apparent, however, that more goods can be sold by either reducing the cost of goods or by increasing the consumers' purchasing power. Manufacturing plants ideally located in any country are relatively few in number as most enterprises have sprung from small beginnings through the initiative of one or more individuals and have expanded in the same location. This often results in higher production and distribution costs which newer industries, more strategically situated, avoid. If, therefore, a new industry can reduce the cost of production and the price on the market by location in a more economical place, there is a definite contribution to the national interest. Likewise, if a new industry is properly established, its purchases, employment of people and profits to its owners will expand and strengthen the demand for other goods. On the other hand, an industry for which there is no economic justification should not be encouraged.

As previously noted, greater Winnipeg is the oldest and largest consuming centre of Manitoba and the Prairies. For this and other reasons, practically all manufacturers of consumer goods are located there. A wider distribution throughout the province, where

economically justifiable, is desirable. In a few cases, manufacturers have moved to other areas in the province. The Rural Electrification Programme of the Manitoba Power Commission may influence others to do the same.

The recent war has accentuated general interest everywhere in industrial expansion and every province in Canada is striving for such expansion. Manitoba must, therefore, expect much greater competition in many products in the prairie market, in particular from increased manufacturing production in Saskatchewan and Alberta. This must be compensated for largely by the production of new lines.

A large number of manufacturing industries are dealt with in detail in another section of this report. However, as the value of production of the industries indicates the volume of market obtained, the gross value of production of the manufacturing industries in Manitoba is presented here for 1939 and 1943. The latter shows the effect of three years of war. At that time the average wholesale price level of commodities had risen to almost 25% over 1939. Price increases varied with different groups. For example, vegetable products increased 25.5%, animal products 32.7% and non-ferrous products only 8.4%. Based on the average of a 25% increase, however, the increase would only account for about 35 million dollars of the 170 million dollar increase in the value of the manufacturing production.

Where less than three firms are engaged in any one industry, the value of production is shown under "all other industries".

GROSS VALUE OF PRODUCTION

<u>INDUSTRY</u>	<u>1939</u>	<u>1943</u>
<u>Vegetable Products</u>	<u>\$24,511,649</u>	<u>\$53,894,709</u>
Aerated Waters	2,164,895	2,634,379
Biscuits and Confectionery	2,343,827	5,682,890
Bread and Bakery	3,663,771	5,468,541
Breweries	2,709,508	4,050,783
Foods, - Miscellaneous including Coffee, Tea and Spices	3,588,481	7,430,755
Flour and Feed Mills	6,126,143	18,880,791
Foods, Breakfast	226,241	610,161
Stock and Poultry Foods	306,860	1,703,224
Fruit and Vegetable Preparations	571,667	843,122
Macaroni, Vermicelli	151,606	471,214
Malt and Malt Products	2,299,769	3,274,540
All Other Industries	358,881	2,844,309
<u>Animal Products</u>	<u>40,242,120</u>	<u>123,058,339</u>
Boots and Shoes, Leather	370,242	797,393
Butter and Cheese	9,760,277	18,289,093
Processed Cheese	*	1,162,271
Fur Dressing and Dyeing	121,853	194,468
Fur Goods	1,701,984	2,870,839
Gloves and Mittens, Leather	355,299	713,860
Leather Goods, Miscellaneous	304,508	1,231,426
Sausages and Sausage Casings	494,072	936,676
Slaughtering and Meat Packing	26,779,130	96,073,714
All Other Industries	364,755	732,381
Other Dairy Products	*	56,218
<u>Textile and Textile Products</u>	<u>10,156,634</u>	<u>24,611,746</u>
Awnings, Tents and Sails	49,260	223,137
Bags - Cotton and Jute	2,198,932	6,584,755
Clothing - Men's, including Furnishings	4,114,406	8,327,702
Clothing, Women's	2,741,507	6,758,069
Cotton Textiles, N.E.S.	30,329	-
Hats and Caps	482,248	1,255,356
Hosiery and Knit Goods	366,562	659,064
All Other Industries	173,390	803,663

GROSS VALUE OF PRODUCTION

<u>INDUSTRY</u>	<u>1939</u>	<u>1943</u>
<u>Wood and Paper Products</u>	<u>\$16,686,920</u>	<u>\$25,089,625</u>
Boxes and Bags, Paper	1,645,290	3,062,803
Boxes, Wooden	530,320	957,122
Carriages, Wagons, Sleighs	143,417	225,013
Coffins and Caskets	*	327,414
Engraving, Stereotyping and Electrotyping	467,393	541,508
Furniture	927,960	1,333,144
Miscellaneous Paper Products	267,941	961,308
Miscellaneous Wooden Products	65,541	160,041
Planing Mills	842,515	1,545,922
Printing and Bookbinding	3,152,296	3,485,111
Printing and Publishing	3,978,103	4,224,666
Saw Mills	1,206,727	2,538,835
All Other Industries	3,449,731	5,726,738
Copperage	9,686	
<u>Iron and Steel Products</u>	<u>19,905,711</u>	<u>41,933,150</u>
Agricultural Implements	372,773	872,926
Automobile Supplies	171,824	1,891,135
Castings and Forgings	977,966	2,001,293
Iron and Steel Products, N.E.S.	934,853	2,551,660
Machinery	396,364	525,384
Primary Iron and Steel	1,610,745	4,154,981
Railway Rolling Stock	12,146,547	17,695,431
Sheet Metal Products	1,489,384	3,163,352
All Other Industries	1,805,255	4,626,955
Aircraft	*	3,295,259
Hardware and Tools	*	304,110
Machine Shops	*	850,664
<u>Non-Ferrous Metals</u>	<u>11,631,043</u>	<u>8,103,429</u>
Brass and Copper Products	646,643	1,630,452
Electrical Apparatus and Supplies	588,971	1,150,151
All Other Industries	10,395,429	5,281,228
Jewellery, Silverware	*	41,598
<u>Non-Metallic Mineral Products</u>	<u>4,723,051</u>	<u>9,179,666</u>
Clay Products from Domestic Clays	78,892	132,382
Glass Products	75,790	207,543
Lime	196,190	307,819
Petroleum Products	1,884,891	3,376,004
Stone, Monumental and Ornamental	102,638	132,743
All Other Industries	2,384,650	4,780,202
Miscellaneous Non-Metallic	*	187,507

<u>INDUSTRY</u>	<u>GROSS VALUE OF PRODUCTION</u>	
	<u>1939</u>	<u>1943</u>
<u>Chemicals and Chemical Products</u>	<u>\$4,369,670</u>	<u>\$14,863,116</u>
Gases, Compressed	360,714	498,685
Medicinal and Pharmaceutical Preparations	1,205,342	1,355,356
x Miscellaneous Chemical	621,525	9,563,019
Paints, Pigments and Varnishes	1,202,886	2,148,991
Soaps and Washing Compounds	723,323	729,805
Toilet Preparations	30,244	133,118
All Other Industries	225,636	434,142
<u>Miscellaneous Products</u>	<u>2,056,797</u>	<u>4,134,132</u>
Brooms, Brushes and Mops	165,795	305,467
Mattresses and Springs	1,562,563	3,038,629
Scientific and Professional Equipment	18,958	54,942
Signs, Electric, Neon and Other	110,763	359,977
Stamps and Stencils, Rubber and Metal	24,494	35,956
All Other Industries	174,224	289,423
Statuary, Art Goods and Novelties*		49,738
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TOTAL	<u>\$134,293,595</u>	<u>\$304,867,912</u>

* Included under "All Other Industries "

x Mainly due to war production of explosives.

GROSS VALUE OF PRODUCTION BY GROUPS

	<u>1939</u>	<u>1943</u>
Vegetable Products	\$24,511,649	\$53,894,709
Animal Products	40,252,120	123,058,339
Textile and Textile Products	10,156,634	24,611,746
Wood and Paper Products	16,686,920	25,089,625
Iron and Steel Products	19,905,711	41,933,150
Non-Ferrous Metals	11,631,043	8,103,429
Non-Metallic Minerals	4,723,051	9,179,666
Chemicals and Chemical Products	4,369,670	14,863,116
Miscellaneous Products	2,056,797	4,134,132
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	\$134,293,595	\$304,867,912
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Purchasing Power

Although the population of the Prairie Provinces has remained almost stationary for a period of ten years, the purchasing power has shown a very considerable increase.

Provincial incomes do not show military pay or investment income. Therefore, in attempting to arrive at comparative figures of the purchasing power of the Prairie Provinces with all of Canada, the estimates shown are exclusive of military pay and investment income. Sources of information are two recent publications by the Dominion Bureau of Statistics, "National Accounts, Income and Expenditure 1938-1945" and "Net Income of Farm Operators from Farming Operations, Canada 1938-1945".

In the following table are shown estimates of salaries and wages, income of individual enterprise, excluding farm operators, cash income from sale of farm products, purchasing power (total of the preceding three items) and the purchasing power per person, for the three Prairie Provinces, separately and combined, Ontario and Canada for the years 1939, 1941 and 1943. The percentage increases in 1943 over 1939 are also shown:

PURCHASING POWER

	(a) Salaries and Wages	(b) Individual En- terprise Ex- cluding Farm Operators	(c) Cash Income From Sale of Farm Products	(d) Purchasing Power - Total of (a)(b)(c)	(e) Purchasing Power Per Person
	\$ '000	\$ '000	\$ '000	\$ '000	\$
Manitoba:					
1939	142,000	23,000	64,751	229,751	316
1941	180,000	29,000	81,648	290,648	498
1943	219,000	32,000	146,112	397,112	547
% Increase of 1943 over 1939	54.2	39.1	125.6	77.2	72.8
Saskatchewan:					
1939	101,000	19,000	158,062	278,062	307
1941	123,000	24,000	161,955	308,955	344
1943	149,000	28,000	327,634	504,634	599
% Increase of 1943 over 1939	47.5	47.4	107.3	81.5	95.1
Alberta:					
1939	130,000	24,000	120,167	274,167	349
1941	169,000	28,000	154,408	351,408	441
1943	212,000	35,000	220,447	467,447	590
% Increase of 1943 over 1939	63.1	45.8	83.4	70.5	69.0
Prairie Provinces (combined):					
1939	373,000	66,000	342,980	781,980	323
1941	472,000	81,000	398,011	951,011	393
1943	580,000	95,000	694,193	1,369,193	580
% Increase of 1943 over 1939	55.5	43.9	102.4	75.1	79.5
Ontario:					
1939	1,073,000	157,000	217,925	1,447,925	390
1941	1,526,000	196,000	286,487	2,008,487	530
1943	2,017,000	218,000	385,946	2,620,946	669
% Increase of 1943 over 1939	88.0	38.8	77.1	81.0	71.6
Canada:					
1939	2,540,000	401,000	722,334	3,663,334	325
1941	3,529,000	503,000	914,039	4,946,039	430
1943	4,790,000	580,000	1,409,561	6,779,561	575
% Increase of 1943 over 1939	88.5	44.6	95.1	85.1	76.9

More recently, higher prices for farm products and continuous good crops have increased the income of the Prairies and farm cash income in 1943 was almost three times, and in 1944, four times that of 1935. Low prices for farm products are quickly reflected in lower purchasing power in the Prairies where farm cash income constitutes such a high percentage of the total income, about 45% in 1939, 50% in 1943 and 60% in 1944. The corresponding percentages for Canada as a whole are 20%, 21% and 26%.

The Dominion Government's declared policy of placing floor prices on certain agricultural products, including wheat, should minimize in the future, the drastic curtailment of purchasing power which has occurred at intervals in the past.

The variation in farm income over a wider range of years is shown in the following table.

Cash Income from the Sale of
Farm Products in the Prairie Provinces
for Stated Years

Year	Manitoba \$ '000	Saskatchewan \$ '000	Alberta \$ '000	Prairies \$ '000
1926	87,794	297,177	162,504	543,475
1930	48,312	122,393	95,419	266,124
1935	36,128	108,103	98,912	243,143
1939	64,751	158,062	120,167	342,980
1940	64,978	150,854	127,192	343,024
1941	81,648	161,955	154,408	398,011
1942	103,422	195,825	168,887	468,134
1943	146,112	327,634	220,447	694,193
1944	168,436	503,302	314,126	985,864
1945	152,600	410,200	284,600	847,400

Note: Cash income does not include income accruing to farmers from outside sources nor the value of products consumed in the farm home. The above figures do not include

Payments from Government under

Wheat Acreage Reduction Act

Prairie Farm Assistance Act

Prairie Farm Income Act

Participation Certificate on Wheat Crops.

Payments under these - mainly in the Prairie Provinces - amounted to \$32,000,000 in 1943 and \$65,300,000 in 1944.

The purchasing power of persons other than those engaged in agriculture in the Prairie Provinces, in an average year, is about 50% of the total. In considering consumer markets, information on the number of these persons and their income bracket is important and pertinent figures for the year 1942 follow:

Estimated Distribution of Aggregate Income
By Income Classes - 1942
Excluding Agricultural and Armed Services

Income Class \$	Number of Income Recipients	Percentage	Total Income \$1000	Percentage
<hr/>				
Under 1,000:				
Prairie Provinces	201,630	49.8	99,053	19.3
Canada	1,553,390	44.8	1,030,926	18.4
1,000 - 2,000:				
Prairie Provinces	138,720	34.3	202,395	39.4
Canada	1,313,510	37.8	2,318,164	41.5
2,000 - 5,000:				
Prairie Provinces	57,790	14.3	156,049	30.3
Canada	541,350	15.6	1,594,708	28.5
Over 5,000:				
Prairie Provinces	6,405	1.6	56,371	11.0
Canada	63,205	1.8	648,659	11.6
Total:				
Prairie Provinces	404,545	100.0	513,868	100.0
Canada	3,471,455	100.0	5,592,457	100.0
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Retail Commodity Sales:

The latest detailed commodity figures published by the Dominion Bureau of Statistics are those for 1941 and the attached table shows the estimated commodity sales in retail merchandising establishments in the three Prairie Provinces, British Columbia, Ontario and Canada.

1941
ESTIMATED COMMODITY SALES IN RETAIL MERCHANDISING ESTABLISHMENTS.

Commodity	Manitoba	Saskatchewan	Alberta	British Columbia	Ontario	Canada (1)
	\$ '000.					
Total, retail merchandising stores	210,833	186,886	221,071	309,573	1,406,977	3,440,902
Less receipts from services in retail merchandising stores	4,082	3,568	5,070	5,748	26,287	61,267
Sales of commodities in retail merchandising stores	206,751	183,318	216,001	303,825	1,380,690	3,379,635
Alcohol Beverages (2)	5,642	6,167	9,049	15,831	55,735	156,193
Automotive Commodities	28,360	36,694	44,065	46,627	245,146	543,330
Passenger Cars, New	5,276	6,307	7,665	9,458	51,298	112,712
Commercial Vehicles, New	1,510	3,040	2,901	3,345	13,863	36,035
Motor Vehicles, Used	5,438	6,228	8,942	11,775	54,899	113,402
Tractors	1,324	4,218	3,609	292	3,996	13,633
Tires and Tubes	1,235	1,189	1,998	2,646	10,202	23,080
Storage Batteries	271	290	508	460	1,982	4,796
Parts and Accessories - Other	3,658	4,403	5,254	4,297	20,491	52,971
Gasoline	8,643	9,646	11,617	13,258	81,571	170,027
Lubricating Oils and Greases	1,005	1,373	1,631	1,096	7,255	16,674
Building Materials (3)	7,078	7,364	7,414	6,824	33,964	83,683
Clothing and Furnishings, Men's and Boys'	13,307	9,850	10,281	11,287	69,625	177,640
Custom Clothes	1,542	835	1,030	1,980	13,952	29,236
Ready-Made Clothes	2,999	2,560	2,675	3,844	17,515	47,412
Furnishings	6,357	4,318	4,529	6,337	28,953	74,842
Clothing, Other	2,409	2,139	2,047	2,126	9,205	26,150
Clothing, Women's, Misses' and Childrens'	19,223	12,041	12,730	20,566	104,145	250,857
Women's & Misses' Ready-to-Wear -Outerwear	7,036	5,476	6,027	10,482	42,134	112,994
Women's and Misses' Underwear	3,560	1,963	2,058	2,894	15,210	30,554
Girls' and Infants' Wear	2,421	1,120	987	1,387	10,000	23,039
Millinery	993	616	635	1,203	6,881	15,932
Hosiery	2,694	1,925	2,019	2,964	14,723	35,902
Fur and Fur Goods	1,719	939	1,004	1,636	8,897	24,446
Drugs and Sundries	3,309	2,857	3,345	4,860	24,519	56,206
Prescriptions (4)	746	625	732	1,266	4,088	11,732
Drugs, Pharmaceuticals, etc.	1,861	1,744	2,049	2,842	16,851	36,324
Drug Sundries	702	488	564	752	3,560	8,150
Dry Goods and Notions	9,870	5,204	5,053	6,764	36,951	96,659
Piece Goods	2,303	1,718	1,309	1,355	8,223	25,924
Bedding and House Linen	3,783	1,510	1,478	2,275	12,458	30,119
Notions and Small Wares	3,784	1,946	2,266	3,135	16,265	40,613
Electrical Appliances and Sundries	2,904	1,676	2,334	4,079	20,727	43,112
Refrigerators	959	371	669	1,318	6,959	13,478
Vacuum Cleaners	97	85	156	230	850	1,668
Washing Machines	448	309	419	577	3,231	7,716
Ranges and Stoves	528	115	162	387	2,470	4,218
Household Heaters (plug-in)	219	207	217	334	1,666	3,568
Other Appliances and Supplies	657	589	711	1,230	5,561	12,464
Food and Kindred Products	45,322	42,725	52,429	84,463	328,526	865,123
Bakery Products, Fresh (5)	1,622	1,180	1,995	3,665	10,864	29,477
Candy and Confectionery	3,702	3,333	3,660	5,152	22,791	64,656
Fresh Fruits and Vegetables	6,684	5,418	7,090	10,450	41,314	106,960
Fresh and Cooked Meats (including poultry and fish)	8,723	7,256	9,843	19,015	75,897	190,133
Dairy Products and Eggs (6)	4,124	2,532	3,437	10,953	48,931	109,624
All Other Food Products	20,467	22,606	26,398	35,228	128,729	344,273
Fuel	7,348	5,735	3,274	4,918	59,718	112,612
Furniture	3,017	2,564	3,867	6,146	28,055	64,541
Gas Appliances and Supplies	64	53	257	278	2,487	4,539
Hardware	3,283	4,993	5,934	4,762	16,509	52,734
House Furnishings	3,026	1,466	2,056	4,239	18,707	43,075
Draperies, Upholstery and Curtains	1,114	455	567	1,424	6,360	13,805
Floor Coverings	1,138	568	991	1,987	8,731	20,179
Awnings, Shades and Blinds	374	112	144	259	1,342	2,994
Mirrors, Pictures and Art Goods	259	106	175	297	1,527	3,395
House Furnishings, other	141	225	179	272	747	2,702
Household Supplies	5,448	3,699	4,724	7,585	26,003	68,063
Soaps and Cleaning Compounds	2,281	1,590	2,050	3,140	10,855	27,247
China, Glassware and Crockery	925	730	1,007	1,875	6,621	15,731
Other Household Supplies	2,242	1,379	1,667	2,570	10,467	25,085
Jewellery, Silverware, Clocks and Watches	2,762	1,465	1,098	3,664	16,582	38,035
Clocks	176	101	115	152	742	1,804
Watches	697	349	391	642	3,680	7,819
Plated Silverware	423	289	365	844	2,876	6,508
Sterling Silverware	206	29	128	295	919	2,679
All Other Jewellery	1,260	697	899	1,755	8,365	19,225
Luggage and Leather Goods	346	240	417	647	2,617	5,735
Musical Instruments and Accessories	729	231	326	694	2,138	5,582
Paints, Varnishes and Glass	1,066	1,068	1,434	1,334	7,931	17,944
Paints, Varnishes and Lacquers	930	854	1,180	1,071	6,537	16,317
Glass and Painters' Supplies	136	214	254	263	1,394	3,597
Radios and Radio Equipment	1,182	554	961	1,532	7,538	16,140
Car Radio Sets	45	6	26	50	325	1,126
Battery Operated Radio Sets	149	132	117	138	536	1,683
Radio Sets, Other	881	369	743	1,176	6,169	11,808
Radio Parts and Accessories	107	47	75	168	508	1,443
Shoes and Other Footwear	7,755	5,594	5,052	7,476	36,209	93,334
Boots and Shoes, Men's and Boys'	2,276	1,661	1,746	2,920	10,940	29,041
Boots and Shoes, Women's and Misses'	3,055	2,106	1,903	2,970	15,504	36,520
Boots and Shoes, Children's and Infants'	1,019	538	407	441	2,511	7,395
Rubbers and Overshoes	986	1,032	745	599	5,060	14,763
Footwear, Slippers, and Other	419	257	281	546	2,194	5,461
Sporting Goods and Bicycles	1,168	675	922	1,288	5,568	12,943
Stationery, Books and Magazines	2,735	1,750	2,306	3,537	15,836	36,487
Stoves and Ranges (Other Than Gas or Electric)	532	667	631	909	2,477	9,441
Toilet Articles and Preparations	2,143	1,375	1,448	2,476	10,563	25,508
Toilet Preparations and Cosmetics	1,595	1,036	1,261	2,129	9,256	21,699
Toilet Articles	546	359	187	347	1,307	3,809
Toys, Games and Wheel Goods	609	409	394	577	4,068	9,020
Wallpaper	227	175	232	213	1,970	4,359
Miscellaneous Merchandise	19,133	18,936	22,596	30,622	136,570	344,394
Receipts from Sale of Meats and Lunches (7)	7,834	6,359	9,218	14,447	51,499	124,827
Second-hand Merchandise	1,328	731	1,253	2,177	6,307	15,580

- (1) Includes Yukon and North West Territories.
(2) Exclusive of sales of beer and wine in hotels.
(3) Exclusive of retail sales made by manufacturing establishments such as sawmills and planing mills.
(4) Exclusive of sales of prescriptions through physicians' dispensaries.
(5) Exclusive of retail sales of manufacturing dairies.
(6) Exclusive of retail sales of manufacturing dairies.
(7) Includes sales of meals by restaurants and lunch counters in retail stores.

The proportion of total retail commodity sales in the Prairies to those in Canada bears a reasonable relationship to the population, especially of Manitoba and Alberta. The higher ratio of sales in Ontario is to be expected owing to the concentration of wealth and industry in that province.

The percentages are as follows:

	Retail Commodity Sales 1941 Millions \$	Percentage of Sales	Percentage of Population
Manitoba	207	6.1	6.4
Saskatchewan	183	5.4	7.8
Alberta	216	6.4	6.9
Prairies	606	17.9	21.1
Ontario	1,381	40.8	32.9
Canada	3,379	100.0	100.0

The retail commodity sales of the Prairie Provinces and Canada represent about 64% and 68% respectively of the total income or purchasing power exclusive of investment income and military pay.

Since 1941, total retail sales in Canada have risen about 21% to \$4,124,000 in 1944. The increases in the Prairies were greater than the general average as the following figures illustrate:

	Total Retail Sales 1944 Millions \$	Index of Sales 1941 = 100
Manitoba	265	125.7
Saskatchewan	248	132.7
Alberta	293	132.4
Prairies	806	130.4
Ontario	1,558	110.8
Canada	4,124	119.9

Retail sales have continued to rise since 1944. Canadian retail sales in 1945 increased 8.4% over those in 1944. The percentage increase is not available for the Prairie Provinces but, on the basis of 1941-44 record, an increase in excess of 8.4% is indicated.

A comparison of the retail sales with manufactured production would indicate that opportunities exist for the expansion of some commodities now manufactured in limited quantity and for new lines which are not made in Manitoba.

It should be noted here that Winnipeg is the fourth largest retail sales centre in Canada, with Calgary ninth and Regina thirteenth. The 1941 retail sales of the fourteen leading Canadian cities are presented:

Montreal, Quebec	\$425,080,300
Toronto, Ontario	402,733,000
Vancouver, B.C.	145,204,800
Winnipeg, Manitoba	136,614,800
Hamilton, Ontario	86,946,800
Ottawa, Ontario	81,501,100
Quebec, Quebec	63,201,800
Windsor, Ontario	53,688,400
Calgary, Alberta	51,813,900
Halifax, N.S.	51,151,700
Edmonton, Alberta	47,931,400
London, Ontario	39,989,900
Regina, Saskatchewan	37,929,300
Victoria, B. C.	36,761,400

Purchasing Habits

The following tables show the percentage distribution of total sales of retail merchandising establishments for Manitoba, Saskatchewan, Alberta, British Columbia and Canada by commodity groups and the percentage distribution of total commodity group retail sales by provinces as noted.

PERCENTAGE DISTRIBUTION OF TOTAL SALES OF RETAIL MERCHANDISING ESTABLISHMENTS
BY COMMODITY GROUPS - 1941.

(Percentage that sales of each group bear to total sales in Canada and in each province noted).

Commodity	Manitoba	Sask.	Alberta	* B.C.	Ontario	Canada
Alcoholic	2.73	3.36	4.19	5.21	4.04	4.62
Automotive Commodities	13.72	20.02	20.40	15.35	17.76	16.08
Building Materials	3.42	4.02	3.43	2.25	2.46	2.48
Clothing and Furnishings, Men's and Boys'	6.44	5.37	4.76	4.70	5.04	5.26
Clothing, Women's, Misses' and Children's	9.30	6.57	5.89	6.77	7.54	7.42
Drug and Drug Sundries	1.60	1.56	1.55	1.60	1.78	1.66
Dry Goods and Notions	4.77	2.84	2.34	2.23	2.68	2.86
Electric Appliances and Supplies	1.40	0.91	1.08	1.34	1.50	1.28
Food and Kindred Products	21.92	23.31	24.27	27.80	23.79	25.60
Fuel	3.55	3.13	1.52	1.62	4.32	3.33
Furniture	1.46	1.40	1.84	2.02	2.03	1.91
Gas Appliances and Supplies	0.03	0.03	0.12	0.09	0.18	0.13
Hardware	1.59	2.72	2.75	1.57	1.20	1.56
House Furnishings	1.46	0.80	0.95	1.40	1.35	1.27
Household Supplies	2.64	2.02	2.19	2.50	2.03	2.01
Jewellery, Silverware, Clocks and Watches	1.34	0.80	0.88	1.21	1.20	1.13
Luggage and Leather Goods	0.17	0.13	0.19	0.21	0.19	0.17
Musical Instruments and Accessories	0.35	0.13	0.15	0.23	0.16	0.16
Paints, Varnishes and Glass	0.52	0.58	0.66	0.44	0.57	0.59
Radios and Radio Equipment	0.57	0.30	0.44	0.50	0.55	0.48
Shoes & Other Footwear	3.75	3.05	2.34	2.46	2.62	2.76
Sporting Goods & Bicycles	0.56	0.37	0.43	0.42	0.40	0.38
Stationery, Books and Magazines	1.32	0.95	1.07	1.16	1.15	1.08
Stoves & Ranges (other than Gas or Electric)	0.26	0.36	0.29	0.30	0.18	0.28
Toilet Articles and Preparations	1.04	0.75	0.67	0.81	0.77	0.76
Toys, Games & Wheel Goods	0.29	0.22	0.18	0.19	0.29	0.27
Wallpaper	0.11	0.10	0.11	0.07	0.14	0.13
Miscellaneous Merchandise	9.26	10.33	10.46	10.08	9.89	10.19
Receipts from Sale of Meals	3.79	3.47	4.27	4.75	3.73	3.69
Second-hand Merchandise	0.64	0.40	0.58	0.72	0.46	0.46
TOTAL	100.00	100.00	100.00	100.00	100.00	100.00

* Includes Yukon and Northwest Territories.

PERCENTAGE DISTRIBUTION OF TOTAL COMMODITY GROUP RETAIL SALES

BY SOME PROVINCES - 1941

(Percentage that provincial sales bear to total sales of each commodity group in Canada)

<u>Commodity</u>	<u>Manitoba</u>	<u>Sask.</u>	<u>Alberta</u>	<u>* B.C.</u>	<u>Ontario</u>
Alcoholic Beverages	3.61	3.95	5.79	10.35	35.68
Automotive Commodities	5.22	6.75	8.11	8.60	45.12
Building Commodities	8.46	8.80	8.86	8.16	40.59
Clothing and Furnishings, Men's and Boys'	7.49	5.55	5.79	8.18	39.19
Clothing, Women's, Misses' and Children's	7.66	4.80	5.07	8.27	41.52
Drugs and Drug Sundries	5.89	5.08	5.95	8.74	43.62
Dry Goods and Notions	10.21	5.38	5.23	7.24	38.23
Electric Appliances & Supplies	6.74	3.89	5.41	9.48	48.08
Food and Kindred Products	5.24	4.94	6.06	9.97	37.97
Fuel	6.52	5.09	2.91	4.37	53.03
Furniture	4.67	3.97	6.15	9.54	43.47
Gas Appliances and Supplies	1.41	1.17	5.67	6.14	54.79
Hardware	6.23	9.47	11.25	9.45	31.31
House Furnishings	7.02	3.40	4.77	9.87	43.43
Household Supplies	8.01	5.43	6.94	11.33	41.14
Jewellery, Silverware, Clocks and Watches	7.26	3.85	4.99	9.66	43.60
Luggage and Leather Goods	6.03	4.18	7.27	11.30	45.63
Musical Instruments and Accessories	13.06	4.15	5.83	12.44	38.30
Paints, Varnishes and Glass	5.35	5.37	7.20	6.80	39.83
Radios and Radio Equipment	7.32	3.43	5.95	9.50	46.71
Shoes and Other Footwear	8.31	5.99	5.41	8.21	38.79
Sporting Goods and Bicycles	9.03	5.21	7.13	10.01	43.02
Stationery, Books & Magazines	7.49	4.80	6.32	9.75	43.40
Stoves and Ranges (Other than Gas and Electric)	5.66	7.09	6.71	9.75	26.36
Toilet Articles and Preparations	8.39	5.39	5.68	9.77	41.41
Toys, Games and Wheel Goods	6.75	4.53	4.37	6.41	45.10
Wallpaper	5.20	4.02	5.33	4.88	45.18
Miscellaneous Merchandise	5.56	5.50	6.56	9.01	39.65
Receipts from Sale of Meals	6.28	5.09	7.38	11.61	41.26
Second-hand Merchandise	8.53	4.70	8.04	13.98	40.48
TOTAL	6.12	5.42	6.39	9.11	40.85

* Includes Yukon and Northwest Territories.

A study of these tables shows generally a remarkable similarity in the purchasing habits of the Prairies with other parts of Canada, with due consideration, of course, to conditions which vary with locations. This leads to the conclusion that it is unnecessary to deal at length with any difference which might exist in the buying requirements of the various racial groups in the Prairies. Many years have passed since there was mass immigration to this region, and it is apparent, that while there are still left small groups whose buying habits are somewhat out of line, in general the merchandise purchased by the average family in the Prairies does not differ substantially from the other parts of the Dominion.

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Volume III

INDUSTRIAL SURVEY

of

The Resources

of the

Province of Manitoba

1947



Prepared for the

INDUSTRIAL DEVELOPMENT BOARD
OF MANITOBA

by

DONALD, ROSS & COMPANY

Montreal

VOLUME III

I N D E X

	<u>Page Nos.</u>
Agriculture	1 - 22
General	1
Farms	1 - 6
Farm Production	7 - 22
Field Crops	9 - 15
Farm Animals	16 - 17
Wool	17 - 18
Dairy Products	18 - 19
Poultry Products	20 - 21
Honey	21 - 22
Mining	23 - 51
General	23 - 24
Metallic Minerals	24 - 30
General	24 - 25
Copper	25
Gold and Silver	25 - 26
Zinc	26 - 27
Miscellaneous Minerals	27 - 28
Lithium	28 - 29
Chromium	30
Non-Metallics	31 - 51
Coal	31
Oil	31
Natural Gas	31 - 32
Gypsum	32 - 33
Salt	33 - 34
Stone	34 - 37
Clay and Shales	38 - 42
Sand and Gravel	42 - 43
Silica Sand	43 - 45
Foundry Sands	46
Feldspar	46 - 47
Peat Moss	47 - 51

I N D E X

	<u>Page Nos.</u>
Forestry	52 - 59
General	52 - 54
Woods Operations	54 - 55
Lumber Production	55 - 56
Pulp and Paper Mills	56 - 57
Utilization	57 - 59
Fisheries	59 - 63
Furs (Trapping and Farming) and Game	64 - 68
Construction Industry	69 - 71
Electric Power Industry.	72
Custom and Repair Industry	72
Tourist Trade	73 - 77

AGRICULTURE

Although settlement began, in Manitoba, in 1812 by Selkirk colonists, agriculture development really started about 1875 on the prairie sections of the southern part of the province, and from that time developed fairly rapidly. The total land now under cultivation amounts to about 8,000,000 acres, representing about one-third of the organized area of the province and one-twentieth of its total area.

The soils in the chief farming sections of the province are largely black soils of which the majority are very fertile. The soils in various parts of Manitoba and their suitability for growing various types of crops have been described in some detail in Volume II pages 8 to 11. The greater part of the suitable and more fertile land of the province has been settled. Further tracts of land have been or are being carefully surveyed by the Department of Agriculture with a view to extending the farming acreage. A number are to be settled and one in particular, the Carrot River Valley near The Pas, shows particular promise.

The climate conditions, temperature, rainfall and length of growing season have been dealt with in Volume II pages 12 to 15. As crops are subjected to variable climatic conditions and other hazards, there is considerable variation in the crop production over the years. Mixed farming and the diversification of crops, which have developed fairly rapidly in the province, tend to stabilize the farmer's income.

Farms

Under the Dominion census any individual producing and selling farm products valued at Fifty Dollars (\$50.00) and over is classified as a farmer and his acreage, a farm. The statistics presented here are

those of the Dominion Bureau of Statistics and are based on the 1941 farm census. The number of farms are higher and the average value and acreage lower than those reported by the Manitoba Department of Agriculture.

For example, the Department of Agriculture report 56,000 farms, whereas the Dominion Bureau of Statistics report 58,024. The use of the Bureau's figures permits comparisons to be made with other provinces and Canada.

The classification of farms in 1941 by their tenure, acreage and average acreage per farm is shown for Manitoba and Canada in the table that follows. Approximately 45% of the farm acreage was in crop or under cultivation in Manitoba.

<u>Tenure of Farm Occupied By</u>	<u>M a n i t o b a</u>		<u>Average Acreage Per Farm</u>
	<u>Number of Farms</u>	<u>Acreage</u>	
Owner	38,293	9,251,275	241.6
Manager	378	171,412	453.4
Tenant	10,986	3,424,526	311.7
Part Owner and Part Tenant	<u>8,367</u>	<u>4,043,659</u>	<u>483.2</u>
Total	<u>58,024</u>	<u>16,891,322</u>	<u>291.1</u>

	<u>C a n a d a</u>		
	<u>Number of Farms</u>	<u>Acreage</u>	
Owner	548,821	96,024,424	174.9
Manager	4,828	3,261,435	675.5
Tenant	94,287	27,232,250	293.1
Part Owner and Part Tenant	<u>84,896</u>	<u>48,155,426</u>	<u>567.3</u>
Total	<u>732,832</u>	<u>174,673,535</u>	<u>238.5</u>

The classification of farms by their chief products sold for revenue is shown for Manitoba:

<u>Classification of Farms</u>	<u>Census of 1941</u>
Grains & Hay	22,656
Potatoes, roots, etc.	188
Vegetables, fruits & Nursery products	273
Dairy Products	1,451
Poultry	325
Livestock	4,042
Forest & Apiary Products	407
Mixed Farming	25,030
Part time	1,750

Mixed farms represent 43.1% of the total for Manitoba, 24.5% in Saskatchewan and 31.2% in Alberta.

Information supplied by the acreage department of the Canadian Wheat Board indicates 39,080 sizeable farms in 1945 in Manitoba operating and delivering grain. The classification of these farms as to size is as follows:

<u>Number of Farms</u>	<u>Size in Acres</u>
516	40 and under
2,329	80
10,578	160
2,689	240
10,879	320
1,312	400
4,670	480
676	560
2,820	640
325	720
996	800
157	860
507	960
<u>626</u>	1,000 and over
<u>39,080</u>	345 approximate average

The percentage of owner occupied farms in Manitoba is higher than in the other two prairie provinces. The percentage of farms owner occupied and the average debt by mortgage per acre are shown as follows for the year 1940:

	<u>Percentage of Farms Owner Occupied</u>	<u>Average Debt By Mortgage Per Acre</u>
Manitoba	66.0	\$ 3.68
Saskatchewan	52.6	4.15
Alberta	62.5	3.67
Ontario	71.6	8.56
Quebec	92.5	5.92
Maritimes	92.4	1.88
British Columbia	79.5	4.48
Canada	74.8	4.94

The total farm capital and population of Manitoba are about 8% of that of Canada, and the capital comparison with Canada is shown for the years 1939 and 1943:

	<u>Manitoba</u>		<u>Canada</u>	
	<u>1939</u>	<u>1943</u>	<u>1939</u>	<u>1943</u>
	\$'000		\$'000	
Land & Buildings	225,628	256,849	3,371,018	3,475,812
Implements & Machinery	46,499	61,277	469,287	615,317
Live Stock	<u>57,724</u>	<u>112,412</u>	<u>657,477</u>	<u>1,197,002</u>
Total	<u>329,851</u>	<u>430,538</u>	<u>4,497,782</u>	<u>5,288,131</u>

The number of various machines used on the farms of Manitoba for the census years of 1939 and 1941 and for 1944 are shown in the following table:

	<u>1931</u>	<u>1941</u>	<u>1944</u>
Automobiles	25,588	27,074	22,714
Motor Trucks	3,260	7,566	17,255
Tractors	14,366	22,050	27,684
Grain Combines	355	1,714	7,435
Threshing Machines	10,107	9,979	11,262
Gasoline Engines	17,557	15,772	-
Electric Motors	854	1,374	-

The increase in the number of combines and mechanical equipment will be noted.

The high level of mechanization of Manitoba agriculture is shown in the following table:

	<u>Manitoba</u>	<u>Saskatchewan</u>	<u>Alberta</u>	<u>Ontario</u>	<u>Canada</u>
	(Numbers - Per Farm)				
Automobiles & Motor Trucks	.60	.56	.59	.81	.53
Tractors	.38	.39	.36	.20	.22
Combines & Threshing Machines	.20	.23	.18	.05	.15
Gasoline Engines	.27	.24	.31	.13	.23

The farm population of Manitoba, according to the 1941 census, was about 250,000, or about 34.2% of the total population of the province. The average number of persons per farm was 4.2. Of the farm population 97,949, or 39.2%, were males 14 years or over. Children under 14 years of age accounted for 29.8%, and females 14 years and over, 31.0%.

The percentage of farm population to the total of the province and the number of persons per farm for 1941 are shown in the following table for Manitoba and some other provinces and Canada for comparison. This reflects the higher industrialization of Manitoba as compared with Saskatchewan and Alberta.

	<u>Percentage of Farm Population to Total</u>	<u>Average Persons Per Farm</u>
Manitoba	34.2	4.3
Saskatchewan	57.5	3.7
Alberta	48.2	3.8
British Columbia	12.5	3.9
Ontario	21.1	4.0
Quebec	25.1	5.4
Canada	26.0	4.3

According to the 1941 census, 39.8% of the farms of Manitoba used hired help, as compared to 34.1% in Saskatchewan, 36.4% in Alberta and 36.5% in Canada.

The average cost of farm labour per week in various provinces and Canada was as follows:

Manitoba	\$10.90
Saskatchewan	11.99
Alberta	14.03
British Columbia	14.62
Ontario	11.58
Canada	11.72

The average gross revenue per farm for 1940, according to the farm census for 1941, the average acreage per farm, the value per farm and the revenue per acre are shown in the following table for the leading provinces. The value includes land, buildings, implements and machinery and live stock:

	Revenue Per Farm \$	Acreage Per Farm	Value Per Farm \$	Revenue Per Acre \$
Alberta	1,484	433.0	7,128	3.42
Ontario	1,344	125.6	6,675	10.70
British Columbia	1,274	152.8	5,685	8.33
Manitoba	1,254	291.1	5,845	4.31
Saskatchewan	1,219	432.2	6,466	2.82
Quebec	900	123.9	4,781	7.26
Canada	1,173	238.5	5,787	4.92

The revenue per farm, as reported by the Manitoba Department of Agriculture, is shown for Manitoba for a period of years. The amounts are somewhat higher than those reported by the Dominion Bureau of Statistics owing to the difference in the basis of the number of farms.

1935	\$ 739.
1936	884
1937	1,590
1938	1,238
1939	1,302
1940	1,477
1941	1,550
1942	2,639
1943	3,040
1944	3,279
1945	2,738

Farm Production

Manitoba ranks fifth by provinces in the gross value of agricultural production, being exceeded by Ontario, Saskatchewan, Alberta and Quebec.

For comparison the estimated gross value of production is shown for the Prairie Provinces, Ontario and Canada:

	<u>1939</u> \$'000	<u>1941</u> \$'000	<u>1943</u> \$'000	<u>1944</u> \$'000
Manitoba	96,466	125,714	230,605	243,098
Saskatchewan	238,579	205,803	490,730	624,608
Alberta	187,133	203,803	375,820	420,111
Ontario	372,087	475,884	586,467	620,333
Canada	1,224,616	1,432,601	2,243,984	2,500,135

The estimated gross value of agricultural production in Manitoba by type of products and the total net value are shown in the following table for certain specified years:

Gross Value of Agricultural Production in Manitoba

	<u>1939</u> \$'000	<u>1941</u> \$'000	<u>1943</u> \$'000	<u>1944</u> \$'000	<u>1945</u> \$'000
Field Crops	60,283	74,458	140,989	147,775	133,382
Farm Animals	18,237	23,878	46,396	50,664	39,229
Wool	95	186	296	283	258
Dairy Production	9,416	15,857	22,831	23,280	21,602
Garden Products	2,139	2,170	2,530	2,830	2,925
Poultry Products	4,557	7,421	14,833	15,184	16,122
Fur Farming	794	608	1,224	1,162	934
Clover & Grass Seed	526	609	798	1,198	1,550
Honey & Wax	419	527	708	722	763
Total	96,466	125,714	230,605	243,098	216,765
Total Net Value	71,200	86,768	170,220	183,639	153,354

The year 1944 constituted a peak year in value of production.

The lowest year during the last thirty years was in 1932 with a gross value of production of \$50,193,000.

Manitoba's percentage of Canada's gross value for various types of produce is shown for the year 1943:

Field Crops	12.4%
Farm Animals	9.7
Wool	7.8
Dairy Production	7.3
Garden Production	2.5
Poultry Products	8.9
Fur Farming	13.0
Clover & Grass Seed	11.4
Honey & Wax	<u>11.1</u>
Total	10.3

The percentages of the gross value of production of each main group of farm products in 1943 in Manitoba to the total value of farm products in Manitoba are shown below in comparison with similar percentages for some other provinces and Canada:

	<u>Field Crops</u>	<u>Animals</u>	<u>Dairy Products</u>	<u>Poultry Products</u>
	%	%	%	%
Manitoba	61.1	20.1	9.9	6.4
Saskatchewan	70.0	15.9	6.9	5.4
Alberta	58.2	26.8	7.9	4.7
Ontario	30.9	25.4	18.9	10.4
Canada	50.5	21.2	14.0	7.4

The total net value of farm products in Manitoba, as shown previously, is the gross value of production less the value of seed and feed grains and depreciation in horse value through labour of production. The gross and net values are the same for each group type of products, except for the field crops and farm animals.

The percentage of the net value of each group of products in Manitoba to the total for Manitoba for the year 1943 is as follows:

Field Crops	48.8%
Farm Animals	25.8
Wool	0.2
Dairy Products	13.4
Garden Products	1.5
Poultry Products	8.7
Fur Farming Production	0.7
Clover & Grass Seed	0.5
Honey & Wax	<u>0.4</u>
Total	<u>100.0</u>

Further details of production under the various groups follow. The fur farming production is covered elsewhere in the report under fur production.

Field Crops

The gross value of production of field crops in Manitoba in 1944, with a value of \$147,775,000, constituted a peak production. The lowest gross value of production was in 1931 with a value of only \$24,664,000, due mainly to low prices. The value of the crops has varied sharply over the years due to fluctuations in yields and value per bushel. The average yields per acre of the three main crops - wheat, oats and barley in the period 1941-1945 were higher than any other consecutive five year period during the last thirty years or more. Drought, frost and rust constitute the chief hazards in the yields of field crops.

Wheat

Wheat constitutes the main crop of the province in acreage sown and value of production. During the last thirty years the lowest average yield per acre was 9 bushels in 1935 and the highest 27.8 bushels in 1942. The highest average price per bushel at point of shipment was \$2.06 in 1918 and the lowest, 38 cents in 1932. (The low yield in 1935 was due to the heaviest attack of rust ever experienced by the province.)

The number of acres sown in wheat, the yield and values are shown for the years 1936-1945:

<u>Year</u>	<u>Acreage Sown</u>	<u>Yield/Acre Bus.</u>	<u>Total Yield Bus.</u>	<u>Average Price Point of Shipment</u>	<u>Total Value \$</u>
1936	2,556,600	10.2	26,000,000	\$ 0.91	23,660,000
1937	2,872,000	15.7	45,100,000	1.02	46,002,000
1938	3,184,000	15.7	50,000,000	0.61	30,500,000
1939	3,201,000	19.2	61,300,000	0.55	33,715,000
1940	3,512,000	18.9	66,400,000	0.53	35,192,000
1941	2,442,000	20.9	51,000,000	0.53	27,030,000
1942	1,930,000	27.8	53,000,000	0.72	38,160,000
1943	1,640,000	25.0	41,000,000	1.04	42,640,000
1944	2,505,800	21.9	54,000,000	1.07	58,743,000
1945	2,132,000	18.8	40,000,000	1.09	43,600,000

Barley

With the exception of the occasional year, barley ranks second in field crops in the province in value of production. The lowest average yield per acre during the last thirty years was in 1936 with a yield of 13.3 bushels and the highest was in 1942 with a yield of 36.6 bushels. The lowest average price at point of shipment was 17¢ in 1930 and the highest \$1.17 in 1919.

The number of acres sown in barley, the yield and values are shown for the years 1936 to 1945:

Year	Acreage Sown	Yield/Acre Bus	Total Yield In Bus.	Average Price Point of Shipment \$	Total Value \$
1936	1,423,000	13.3	18,990,000	0.66	12,533,000
1937	1,393,000	25.0	34,800,000	0.47	16,356,000
1938	1,355,000	22.9	31,000,000	0.25	7,750,000
1939	1,344,000	20.8	28,000,000	0.30	8,400,000
1940	1,256,000	21.9	27,500,000	0.28	7,700,000
1941	1,531,000	26.1	40,000,000	0.40	16,000,000
1942	2,021,000	36.6	74,000,000	0.46	34,040,000
1943	2,341,000	29.0	68,000,000	0.66	44,880,000
1944	2,123,000	25.8	54,700,000	0.68	37,196,000
1945	2,139,000	24.5	52,500,000	0.73	38,325,000

Oats

The lowest average yield per acre in the province during the last thirty years was 14.0 in 1936 and the highest, 47.3 in 1942. The lowest average price at point of shipping was 14¢ in 1932 and the highest, 72¢ in 1919.

The number of acres sown, the yield, and values are shown for years 1936-1945:

Year	Acreage Sown	Yield/Acre Bus.	Total Yield Bus.	Average Price Pt. of Shipment \$	Total Value \$
1936	1,453,400	14.0	20,400,000	0.37	7,548,000
1937	1,410,000	30.5	43,075,000	0.38	16,369,000
1938	1,462,000	28.0	41,000,000	0.19	7,790,000
1939	1,377,000	25.1	34,500,000	0.24	8,828,000
1940	1,293,000	25.5	33,000,000	0.21	6,930,000
1941	1,308,000	31.9	41,700,000	0.35	14,595,000
1942	1,480,000	47.3	70,000,000	0.37	25,900,000
1943	1,631,500	38.6	63,000,000	0.52	32,760,000
1944	1,615,000	37.8	61,000,000	0.53	32,330,000
1945	1,697,000	32.1	54,500,000	0.51	27,795,000

Rye

The amount of rye acreage is relatively small as compared to wheat, barley and oats. Both spring and fall varieties are grown. The average price per bushel in 1945 at point of shipping was \$1.34, the highest since 1920. The lowest price was 20¢ in 1932. The highest average yield per acre was 19.5 bushels in 1942 and the lowest, 10.8 bushels in 1936.

The acreage sown, the yields and values are shown for a few selected years:

Year	Acreage Sown	Yield/Acre Bus.	Total Yield Bus.	Average Price Pt. of Shipment \$	Total Value \$
1936	88,300	10.8	950,000	0.61	580,000
1940	159,300	14.1	2,250,000	0.30	675,000
1942	184,000	19.5	3,600,000	0.50	1,800,000
1943	56,000	14.9	836,000	1.00	836,000
1945	26,000	14.6	379,000	1.34	508,000

Flax

The lowest average yield per acre in the province during the last thirty years was 4.7 bushels in 1936 and the highest 11.0 in 1922. The lowest average price per bushel at point of shipment was \$0.67 in 1932, and the highest, \$3.15 in 1918.

The number of acres sown, the yields, and values are shown for the years 1936-1945:

Year	Acreage Sown	Yield/Acre Bus.	Total Yield Bus.	Average Price Pt. of Shipment \$	Total Value \$
1936	89,100	4.7	415,000	\$ 1.42	589,000
1937	38,300	9.7	370,000	1.49	551,000
1938	42,700	7.0	300,000	1.12	336,000
1939	70,300	6.0	425,000	1.40	595,000
1940	89,500	8.9	800,000	1.06	848,000
1941	170,000	6.7	1,145,000	1.25	1,431,000
1942	227,000	8.8	2,000,000	2.01	4,020,000
1943	284,000	9.9	2,800,000	2.16	6,048,000
1944	167,000	10.6	1,762,000	2.54	4,475,000
1945	260,000	10.8	2,800,000	2.44	6,832,000

Potatoes

The lowest average yield per acre in the province during the last thirty years was 30 centals (100 lbs.) in 1936 and the highest, 111 centals in 1918. The lowest average price per cental at point of shipping was 38¢ in 1931 and the highest, \$2.30 in 1929.

The number of acres sown, the yields and values are shown for a number of selected years:

<u>Year</u>	<u>Acreage Sown</u>	<u>Yield/Acre Centals</u>	<u>Total Weight Centals</u>	<u>Average Price Centals, Point of Shipment</u>	<u>Total Value \$</u>
1936	33,600	30	1,006,000	1.40	1,408,000
1937	30,900	80	2,481,000	0.56	1,389,000
1939	36,000	56	2,016,000	0.96	1,935,000
1941	35,000	90	3,150,000	0.76	2,394,000
1943	28,400	85	2,414,000	1.20	2,897,000
1945	25,000	60	1,500,000	1.43	2,145,000

Miscellaneous Grain Crops

The number of bushels and total value of production of miscellaneous grain crops are shown for a number of selected years:

		<u>Mixed Grains</u>	<u>Corn(shelled)</u>	<u>Peas</u>	<u>Buckwheat</u>
1936	- Bushels	153,000	-	22,000	-
	Value \$	69,000	-	25,000	-
1939	- Bushels	619,000	-	29,000	101,000
	Value \$	180,000	-	38,000	61,000
1942	- Bushels	1,372,000	-	168,000	128,000
	Value \$	549,000	-	294,000	90,000
1945	- Bushels	1,043,000	150,000	231,000	96,000
	Value \$	605,000	150,000	575,000	96,000

Hay And Fodder Crops

The number of tons produced and values of hay and fodder crops are shown for a number of selected years:

	<u>Hay & Clover</u>		<u>Alfalfa</u>		<u>Fodder Corn</u>	
	<u>Tons</u>	<u>Value \$</u>	<u>Tons</u>	<u>Value \$</u>	<u>Tons</u>	<u>Value \$</u>
1936	578,000	3,063,000	56,000	392,000	121,000	605,000
1939	706,000	3,707,000	132,000	924,000	270,000	1,215,000
1942	792,000	4,158,000	480,000	3,360,000	150,000	675,000
1945	754,000	4,871,000	656,000	6,160,000	68,000	430,000

Sugar Beets

Sugar beets have been grown in Manitoba since 1940 when a beet-sugar refinery was erected near Winnipeg. The yields of sugar beets per acre are rather low in Manitoba, averaging about 15% below the average for Canada and about 27% lower than the average for Alberta.

The following table shows the acres of sugar beets harvested in Manitoba and the yields for the years 1940-1945:

	<u>Acres</u>	<u>Yield per Acre-Tons</u>	<u>Total Yield Tons</u>
1940	15,700	6.07	95,120
1941	10,700	8.64	92,500
1942	14,130	9.10	128,653
1943	14,129	7.73	109,128
1944	9,520	8.50	80,884
1945	9,800	8.40	82,200

The production of sugar is covered in another section of this report.

Root Crops (Turnips, Mangolds, Etc.)

The quantity produced and values are shown for a number of selected years:

	<u>Cwt.</u>	<u>\$ Value</u>
1936	207,000	143,000
1939	637,000	350,000
1942	324,000	175,000
1945	293,000	293,000

Clover and Grass Seed

The estimated quantity and value of clover and grass seed produced in Manitoba and sold during the years 1939, 1943 and 1945 are shown in the following table. The quantity grown and used by producers is not included.

	1939		1943		1945	
	Lbs.	Value \$	Lbs.	Value \$	Lbs.	Value \$
Alfalfa	1,200,000	204,000	690,000	207,000	960,000	288,000
Brome	360,000	32,400	2,440,000	244,000	2,800,000	224,000
Crested Wheat Grass	200,000	13,000	220,000	19,800	170,000	5,100
Sweet Clover	3,130,000	78,250	3,400,000	340,000	3,600,000	252,000
Timothy	-	-	96,000	5,760	200,000	10,000
Kentucky Blue Grass	-	-	60,000	12,000	500,000	125,000
Western Rye Grass	-	-	19,500	1,365	24,500	1,470
Creeping Red Fescue	-	-	6,000	1,800	74,500	14,900
Total	4,890,000	327,650	6,931,500	831,725	8,329,000	920,470

The price per pound to the farmer of the various seeds is shown for 1939, 1943 and 1945:

	1939 Cents	1943 Cents	1945 Cents
Alfalfa	17	30	30
Brome	9	10	8
Crested Wheat Grass	6.5	9	3
Sweet Clover	2.5	10	7
Timothy	-	6	5
Kentucky Blue Grass	-	20	25
Western Rye Grass	-	7	6
Creeping Fescue	-	30	20

Sunflowers, Argentine Rape and Soybeans

Due to curtailed imports of vegetable oils in the war period, farmers in Manitoba began growing sunflowers, rape and soybeans in 1943.

The number of acres sown, yields and value of production are shown:

		Acres Sown	Yield/Acre Lbs.	Total Quantity Cwt. .	Price Per Cwt.	Total Value \$
Soybeans	1944	400	600	2,400	-	-
	1945	200	600	1,200	-	-
Argentine Rape	1944	6,000	700	42,000	-	-
	1945	9,000	400	36,000	5.50	198,000
Sunflowers	1944	11,300	500	56,500	-	-
	1945	8,500	300	25,500	4.00	102,000

The quantity of rape and sunflowers grown in future years will depend largely on the price level of rape and sunflower oils. In the current year about 25,000 acres have been sown to sunflower in Manitoba.

Fruits and Vegetables

Estimates as made by the Manitoba Department of Agriculture for the value of production of fruits and vegetables are as follows:

	<u>Vegetables</u> <u>(Excluding Potatoes)</u>	<u>Small</u> <u>Fruits</u>	<u>Orchard</u> <u>Fruits</u>	<u>Total</u>
	\$	\$	\$	\$
1939	1,530,000	12,000	8,000	1,550,000
1940	1,550,000	13,000	8,000	1,571,000
1941	1,850,000	13,000	8,000	1,871,000
1942	1,800,000	15,000	10,000	1,825,000
1943	2,500,000	12,000	8,000	2,520,000
1944	2,800,000	20,000	10,000	2,830,000
1945	2,900,000	15,000	10,000	2,925,000

The value of commercial fruits in Canada was \$17,840,000 in 1939 and \$30,835,000 in 1943. The total agricultural production of fruits and vegetables in Canada amounted to \$55,911,000 in 1939 and \$100,262,000 in 1943.

Farm Animals

The estimated number of live stock on Manitoba farms as of June 1st for the years 1939, 1943 and 1945 was as follows:

	<u>1939</u>	<u>1943</u>	<u>1945</u>
Horses	301,000	298,500	264,200
Cattle	750,800	927,500	1,024,500
Swine	322,900	877,000	457,000
Sheep	237,600	327,000	287,600

The percentage of the Canadian total for the year 1943 is shown.

Horses	10.8%
Cattle	9.6
Swine	10.7
Sheep	9.4

The number of cattle and calves marketed in Manitoba and the total estimated value for the years 1939 to 1945 are shown in the following table.

	<u>Number</u>		<u>Value</u>
	<u>Cattle</u>	<u>Calves</u>	<u>\$</u>
1939	175,799	108,771	9,348,879
1940	165,063	111,000	9,821,672
1941	137,351	87,390	9,892,309
1942	177,212	91,487	16,196,553
1943	155,870	80,337	16,209,348
1944	172,872	83,506	16,426,063
1945	210,748	94,201	20,331,983

Cattle and calves marketed in Manitoba are about 12% of the Canadian total. The percentage increase in 1945 over 1939 was 7.1 whereas the value increased about 117.5.

In recent years the numbers of swine and sheep marketed in Manitoba averaged about 9.0% and 11.5% respectively of the total for Canada.

The number of swine and sheep marketed in Manitoba and the values for the years 1939 - 1945 are shown in the following table;

	Swine		Sheep	
	Number	\$ Value	Number	\$ Value
1939	327,212	5,562,604	89,815	588,288
1940	510,789	8,070,466	98,511	669,875
1941	526,111	9,811,970	90,846	717,683
1942	598,059	14,024,484	94,885	872,942
1943	755,206	19,521,831	96,728	875,814
1944	852,078	21,512,848	123,745	928,088
1945	486,648	12,604,183	142,451	1,274,936

Hog production reached its peak in 1944 both in numbers and value. The percentage increase in 1944 over 1939 in number was 160.4 and in value 286.5. There was a sharp drop in production in 1945 and the percentage increase over 1939 in number and value was 48.7 and 126.5 respectively.

The percentage increase in 1945 over 1939 in the number of sheep marketed was 58.6 and in the value, 116.7.

The average prices at Winnipeg per 100 lbs. are shown for cattle, swine and sheep. The prices for swine after 1940 are on the dressed weight basis.

	Cattle All Grades	Calves All Grades	Swine All Grades	Sheep All Grades
	\$	\$	\$	\$
1939	4.81	6.23	8.31	7.45
1940	5.36	6.82	7.89	7.64
1941	6.56	8.35	12.27	8.89
1942	8.17	10.30	14.55	10.21
1943	9.15	11.41	15.86	9.95
1944	8.63	9.92	16.41	9.54
1945	8.20	10.50	16.70	9.40

Wool Production

The production of wool in Manitoba during the six year period 1939 - 1944 was equivalent to about 10.6% of the quantity produced in Canada and 9.7% of the value.

The production in Manitoba and Canada for each of the above years is shown in the following table.

	<u>Manitoba</u>			<u>Canada</u>		
	Lbs.	Price per Lb.	Value to Farmer	Lbs.	Price per Lb.	Value to Farmer
1939	1,112,000	14.25¢	158,460	11,761,000	13.5 ¢	1,588,000
1940	1,152,000	18.0	207,360	11,549,000	19.3	2,228,000
1941	1,114,000	22.0	245,080	11,630,000	22.1	2,571,000
1942	1,262,000	26.0	328,000	12,867,000	25.5	3,283,000
1943	1,341,000	27.0	362,000	13,929,000	27.0	3,761,000
1944	1,586,000	24.75	393,000	15,128,000	27.1	4,106,100
1945	1,568,000	24.75	388,000	Not obtained.		

The percentage increase of production in Manitoba in 1944 over 1939 was about 42.6% in quantity and 148.0% in value of production. The corresponding percentage increases for Canada are 28.6% and 158.5% respectively.

Dairy Products

Manitoba ranks fifth by provinces in the production of dairy products in Canada. The value of production was equivalent to 6.2% of the Canadian total in 1939 and 7.3% in 1943.

The value of production is shown in the table below for Manitoba and Canada.

	<u>Manitoba</u>	<u>Canada</u>
	\$ '000	\$ '000
1939	9,416	150,667
1940	10,879	164,132
1941	15,857	206,543
1942	19,826	283,125
1943	22,831	315,359
1944	23,280	336,131
1945	21,602	

The values as shown include the value of milk consumed directly and of all products produced from milk, whether on the farm or in the factory.

The percentage increase in the value of production in 1944 in Manitoba over that in 1939 was 147.2% while the corresponding increase for Canada was 123.1%.

The quantities of butter and cheese and other products produced and of milk consumed in urban centres and on farms for the years 1939 and 1944 are shown in the following table.

	<u>1939</u> <u>Lbs.</u>	<u>1944</u> <u>Lbs.</u>
Creamery Butter	26,524,240	31,571,555
Dairy Butter	10,844,200	5,627,000
Cheddar Cheese	3,492,958	3,902,744
Cottage Cheese	243,016	600,097
Home-made Cheese	165,000	119,200
Milk and Cream (urban consumption)	115,960,135	184,076,000
Milk and Cream (farm consumption)	149,394,865	140,479,000
Whole Milk fed to Calves	59,974,580	90,650,000
Skim Milk and Buttermilk	839,775,370	725,132,408
Ice Cream	657,933 Gals.	1,172,516 Gals.

The increase in the production value of dairy products in 1944 over 1939 was due chiefly to the increase in prices. Prices for some of the items were as follows -

	<u>1939</u> <u>Price per Lb.</u>	<u>1944</u> <u>Price per Lb.</u>
Creamery Butter	21.5 cents	33.0 cents
Dairy Butter	18.6	32.6
Cheddar Cheese	11.66	22.7
Cottage Cheese	9.3	11.6
Milk and Cream (for urban consumption)	1.74	2.80

Poultry Products

The estimated number of poultry on farms in Manitoba classified as to kinds of poultry and the totals on farms in Manitoba and Canada are shown in the following table for the years 1939 - 1945 as of June 1st.

	<u>Manitoba</u>				<u>T o t a l</u>	
	Hens and Chickens	Turkeys	Geese	Ducks	Manitoba	Canada
1939	5,278,000	551,000	78,000	44,000	5,951,000	62,405,000
1940	5,640,000	580,000	80,000	51,000	6,686,000	63,190,600
1941	5,724,176	596,204	63,393	57,103	6,440,786	63,384,148
1942	7,239,690	916,928	79,419	130,756	8,333,490	73,813,200
1943	8,052,000	511,600	84,900	86,300	8,374,800	79,227,700
1944	9,048,700	514,000	47,400	100,300	9,738,900	91,669,100
1945	8,937,300	456,800	76,600	120,000	9,590,700	Not obtained.

In 1939 the value of poultry products in Manitoba was equivalent to about 8.2% of the Canadian production and in 1943, 8.9%.

The production value of poultry products in Manitoba for the years 1939 - 1945 is shown in the following table.

	<u>Egg Production</u>		<u>Poultry Killed</u>		<u>Total Value Poultry Products</u>
	<u>Number Dozen Eggs</u>	<u>Value to Farmer</u>	<u>Total</u>	<u>Value to Farmer</u>	<u>\$</u>
1939	20,540,000	2,670,200	2,335,200	1,753,880	4,424,080
1940	22,100,000	3,094,000	2,482,000	1,954,450	5,048,450
1941	23,500,000	3,995,000	2,598,000	2,344,850	6,339,850
1942	28,277,000	6,928,000	3,322,000	3,484,000	10,412,000
1943	33,516,450	9,216,900	3,372,000	3,718,750	12,935,650
1944	35,992,000	9,429,900	5,664,500	5,754,500	15,184,400
1945	38,370,000	10,552,000	5,549,500	5,570,400	16,122,400

The percentage increase in the production of eggs in 1945 over 1939 was 86.8% in number and 295.2% in value. The corresponding percentages for poultry killed were 137.7 and 264.4.

The average price of eggs and fowl to the Manitoba farmer is shown for the years 1939 - 1945.

	<u>Eggs per Dozen</u>	<u>Turkeys</u>	<u>Hens and Chickens</u>	<u>Geese</u>	<u>Ducks</u>
1939	13¢	\$1.60	\$0.60	\$0.90	\$0.50
1940	14	1.85	0.60	1.10	0.60
1941	17	2.20	0.70	1.20	0.65
1942	24.5	2.50	0.80	1.40	0.70
1943	27.5	3.00	0.90	1.70	0.85
1944	26.2	3.00	0.85	1.80	0.85
1945	27.5	3.00	0.85	1.80	0.85

The average Canadian prices to the farmer for a dozen eggs varied from 4.4 to 5.5 cents higher than to the Manitoba farmer. Manitoba's prices, however, were one to two cents higher than those of Saskatchewan.

The prices for turkeys received by the Manitoba farmer were in the majority of years equal or above the Canadian average. The prices of hens and chickens were lower by about 21.6% in 1939, 38.8% in 1943 and 44.2% in 1944.

Honey Production

Manitoba ranked second by provinces in the production of honey in 1938, 1939 and 1941, third in 1940 and fourth in 1942 and 1943. Ontario usually accounts for about 50 percent of the production. In 1942 and 1943, production from Saskatchewan and Quebec surpassed Manitoba.

The honey production in Manitoba, the percentage of Canadian production and the Canadian production for some years are shown.

<u>Years</u>	<u>Manitoba Lbs.</u>	<u>Percentage of Canada</u>	<u>Canada Lbs.</u>
1938	9,539,000	20.9	45,701,900
1939	5,400,000	15.7	34,376,100
1940	3,669,900	13.0	28,215,300
1941	4,970,000	14.0	35,220,700
1942	3,142,000	11.2	28,048,700
1943	4,503,000	11.4	39,492,100
1944	5,271,000		Not obtained
1945	4,860,000		

The year 1938 constituted a peak year in pounds production in Manitoba.

Pertinent statistics relative to honey production in Manitoba
are shown in the following table:

	<u>1938</u>	<u>1939</u>	<u>1941</u>	<u>1943</u>	<u>1945</u>
Colonies of Bees, No.	56,650	58,000	45,178	47,400	60,000
Honey per Hive (Lbs. ave)		93-1/2	110	95	81
Total Honey Production					
Lbs.	9,539,860	5,400,000	4,970,000	4,503,000	4,860,000
Price of Honey to Producer, per Lb.	6-1/2¢	7-1/2¢	10¢	15¢	15¢
Value of Honey, Total	\$620,090	\$405,000	\$497,000	\$675,400	\$729,000
Beeswax, Lbs.	-	-	-	45,000	70,000
Beeswax, Total Value	\$ 18,910	-	\$ 19,880	\$ 21,600	\$ 33,600
Honey & Beeswax:					
Total Value	\$639,000	\$405,000	\$516,880	\$697,000	\$762,600

MINING INDUSTRY

The mining industry of Manitoba had its inception in the production of non-metallic minerals such as salt, limestone, clay, gypsum, etc., and until the end of 1916 all recorded production was from non-metallic minerals.

Copper and some gold and silver were produced during the period 1917 - 1920 from ore shipped from the Mandy Mine. A lapse in copper production then occurred until 1930 when the Flin Flon mine commenced production of copper and zinc. Gold and silver production has been recorded continuously since 1917. From 1930 onwards metallic mineral production has largely exceeded non-metallic due, largely, to the production of Hudson Bay Mining and Smelting Company at Flin Flon. Selenium, tellurium and cadmium production commenced at Flin Flon in 1935 and 1936.

A table showing the value of mineral production of Manitoba and Canada for a number of years is set out below. The value of the Manitoba production has varied from 2.5% to 4.3% of the Canadian production in recent years.

Year	Non-Metallics Value	Metallics Value	Total for Manitoba Value	Total for Canada Value
1916	\$1,823,576	\$ 0	\$ 1,823,576	\$177,201,534
1926	3,069,631	3,897	3,073,528	240,437,123
1929	4,958,238	465,587	5,423,825	310,434,726
1930	4,582,934	870,248	5,453,182	279,873,578
1931	2,938,428	7,119,380	10,057,808	230,434,726
1935	1,578,324	10,474,093	12,052,417	312,344,457
1937	1,814,267	13,937,378	15,751,645	457,359,092
1939	1,784,883	15,353,047	17,137,930	474,602,059
1940	2,713,803	15,114,719	17,828,552	529,825,035
1941	2,441,537	14,248,330	16,689,867	560,241,290
1942	2,856,059	11,488,987	14,345,046	566,768,672
1943	3,241,746	10,170,520	13,412,266	530,053,966
1944	3,446,054	10,384,352	13,830,406*	482,260,463

* Tentative

The value of mineral production in Manitoba in 1939 was equivalent to 3.6% of that for Canada and in 1943, 2.5%. The gross value of production from the mining industry in Manitoba in 1939 represented about 10.3% of the total gross value of all production in the province.

Since 1939 the relative position of mining has declined due to war-time conditions causing some curtailment of mining activity and a large increase in the value of agricultural and manufacturing production. It is reasonable to assume, that with the return of more normal conditions, the mining industry will recover and probably better its former relative position.

Some of the principal statistics for Manitoba and Canada for 1939 and 1943, follow:

	<u>No. of Plants and Mines</u>	<u>Capital Invested</u>	<u>Number of Employees</u>	<u>Salaries and Wages</u>
Manitoba		\$		\$
1939	260	36,516,216	3,027	4,541,992
1943	150	29,033,717	1,777	3,497,951
Canada				
1939	14,239	941,775,385	107,941	152,353,208
1943	12,449	1,183,442,427	112,140	207,575,955

Metallic Minerals

The metalliferous deposits, as already noted, occur in the Pre-Cambrian rocks of Southeastern and Northern Manitoba. Metallic mineral production consists mainly of gold, copper, zinc and silver. Cadmium, selenium and tellurium are recovered as by-products of the smelting operations at Flin Flon. Sporadic production of small quantities of lead, tungsten concentrates and lithium ores has also taken place.

Comparatively recent finds of copper-nickel ore at Lynn Lake, about 120 miles north of Sherridon, are being explored. Other metals, which are known to occur but which have not been produced commercially to date, are arsenic, antimony, beryl, bismuth, chromium,

garnet, iron, manganese, molybdenum, platinum group, tantalum and tin.

Maps showing the location of mines and mineral deposits may be readily obtained from the Manitoba Department of Mines.

Copper

Copper has contributed largely to the mineral wealth of the province, the main production being Hudson Bay Mining and Smelting Company at Flin Flon. A substantial production also comes from the Sherritt Gordon property.

The production in Manitoba and in Canada is shown for a number of specified years:

	<u>Manitoba</u>		<u>Canada</u>
	<u>Lbs.</u>	<u>\$ Value</u>	<u>Lbs.</u>
1929	0	0	248,120,760
1930	2,087,609	215,018	303,478,356
1931	45,821,432	3,835,254	292,304,390
1937	44,920,835	5,874,747	530,028,615
1939	70,458,890	7,110,711	608,825,570
1940	75,267,937	7,591,524	655,593,441
1942	47,595,586	4,800,490	603,661,826
1943	38,014,872	4,466,745	575,190,132

Gold and Silver

Gold has contributed largely to the value of mineral production. Although some ore bodies have been exhausted others are being discovered and developed, the most noteworthy development being in the Snow Lake district.

Silver production comes from mines producing base metals and gold. To date no native deposits of silver or highly argentiferous bodies of economic size have been discovered.

The production of gold and silver in Manitoba for a number of specified years is as follows:

	<u>Gold</u>		<u>Silver</u>	
	<u>Fine Ozw.</u>	<u>\$ Value</u>	<u>Fine Ozs.</u>	<u>\$ Value</u>
1920	781	9,095	7,201	5,863
1925	4,689	96,930	582	402
1930	23,189	479,359	94,653	36,114
1932	122,507	2,876,450	1,036,497	328,275
1934	132,321	4,565,075	1,252,920	594,647
1939	180,875	6,537,003	1,028,485	416,413
1942	136,226	5,244,701	828,824	346,530
1943	91,775	3,533,337	587,279	265,767
1944	74,168	2,855,468	569,873	245,045

For comparison, the value of production in Manitoba and in Canada is shown for the years 1939 and 1943.

	<u>Manitoba</u>		<u>Canada</u>	
	<u>\$ Value</u>		<u>\$ Value</u>	
	<u>Gold</u>	<u>Silver</u>	<u>Gold</u>	<u>Silver</u>
1939	6,537,003	416,413	184,115,951	9,378,490
1943	3,533,337	265,767	140,575,088	7,849,111

Zinc

Manitoba, by provinces, is the second largest producer of zinc in Canada, all of the production coming from the Hudson Bay Mining and Smelting Company at Flin Flon. The metal ranks third in the province in its value of production.

The production in Manitoba and Canada is shown for a number of specified years. The peak production in pounds occurred in 1935.

	<u>Manitoba</u>		<u>Canada</u>
	<u>Lbs.</u>	<u>\$ Value</u>	<u>Lbs.</u>
1929	0	0	197,267,087
1930	3,882,141	139,757	267,643,505
1931	35,173,749	898,338	237,245,451
1935	51,129,980	1,584,513	320,649,859
1937	36,221,314	1,775,569	370,337,589
1939	40,302,747	1,236,891	394,533,860
1942	29,908,179	1,020,168	580,257,373
1943	46,783,873	1,871,355	610,754,354

Cadmium, Selenium, Tellurium, Thallium and Tungsten Concentrates

The production of these metals in Manitoba is relatively small and is shown below. With the exception of Tungsten Concentrates the production arises from the operations at Flin Flon.

	<u>Cadmium</u>		<u>Selenium</u>		<u>Tellurium</u>	
	<u>Lbs.</u>	<u>\$ Value</u>	<u>Lbs.</u>	<u>\$ Value</u>	<u>Lbs.</u>	<u>\$ Value</u>
1937	164,223	269,326	43,900	75,982	5,124	8,865
1939	73,830	52,029	-	-	-	-
1942	29,236	34,498	21,209	40,721	361	578
1943	20,983	24,130	5,239	9,168	-	-
1944	20,291	23,013	12,957	23,323	113	198

In 1942, 1,399 lbs. of Tungsten Concentrates, valued at \$1,300., and in 1944, 128 lbs. of Thallium, valued at \$1,690., were produced. The development of any appreciable production of these metals is doubtful.

As very considerable interest has been shown in respect to the possible development of known lithium and chromium ore bodies, a careful study has been made of the economic possibilities for such development.

Lithium

The chief lithium ores utilized in the production of lithium oxide are Spodumene, Amblygonite and Lepidolite containing about 6, 8 and 4 percent lithium oxide respectively. Spodumene is in greatest supply and is the base raw material for the manufacture of many lithium salts, lithium metal and alloys. Amblygonite has similar uses but is not as plentiful and more expensive. Lepidolite or lithiamica is mainly used in the natural state as a batch ingredient in glass. The more important uses of lithium minerals, lithium and its compounds, are in the glass, ceramic, chemical, air-conditioning and metallurgical industries and less extensively in the electrical, pharmaceutical and optical industries.

Lithium ores occur in pegmatite dykes in various localities in Manitoba, chiefly in the southeastern part of the province. Discoveries to date occur near Pointe du Bois, Bernic Lake, Cat Lake and East Baintree; also in the area of Herb Lake near Mile 81 on the Hudson Bay Railway.

All of the small Canadian production of lithium minerals has come from the Pointe du Bois area, where the Lithium Corporation of Canada, Winnipeg, has been most actively interested. There has been no recorded production in Canada since 1937 when 32 tons of Amblygonite and Spodumene valued at about \$1,700. were shipped out of the country for processing. Deposits at Cat Lake and Bernic Lake

have been investigated by some of the larger mining companies.

Five dykes at Cat Lake have been estimated to contain about 25,000 tons of Spodumene for each 100 feet of depth.

Little, if any, lithium ore is used in Canada and, therefore, any production would have to be based on export.

World supplies have come largely from Southwest Africa and the United States. Lithium salts are recovered in the United States as by-products of potash recovery and from mines in South Dakota. It is generally estimated that production from present American sources will exceed peace-time requirements.

United States shipments of ores and salts for the years 1939 - 1944 are given below:

	Ores and Compounds (Short Tons)	<u>\$ Value</u>	<u>Li₂O Short Tons</u>
1939	1,990	-	-
1940	2,011	80,679	113
1941	3,832	115,718	209
1942	5,405	243,516	299
1943	8,155	314,660	463
1944	13,319	552,977	848

The demand for Lithium increased greatly due to its uses in war products. The post-war market is expected to be larger than the 1939 market but no estimate can be given at the present time.

Chromium.

Chromite deposits were discovered in 1942 in the Bird (Odseau) River area in Southeastern Manitoba, about 85 miles north-east of Winnipeg, and have aroused considerable interest. They are found in a folded composite sill of basic and ultrabasic igneous rocks of early Pre-Cambrian age that lies to the north of Bird River. Exploration work carried out to date indicates a large tonnage of ore, with a chromium oxide content of 18 - 26% that can be concentrated to 35 - 42% with a chrome iron ratio of from 1.2 : 1 to 1.5 : 1. Present markets for metallurgical chromite specify a chrome oxide content of 45% or more and a chrome iron ratio in excess of 2.5:1. Further development of these deposits appears dependent upon an improved method of beneficiation or a change in purchasing specifications.

Non-Metallics

The non-metallics, as recorded by the Provincial Department of Mines, cover fuels, gypsum, salt, stone, cement, lime, clay products, sand and gravel and peat moss.

Coal

The only known deposits of coal consist of thin beds of lignite in the tertiary formations of Turtle Mountain and in the Dakota Sandstones in the general area of Swan River. The beds in the sandstone are too thin to work. Those in the Turtle Mountain area are somewhat similar to, but much smaller than those now being operated in the Estevan fields of Southwestern Saskatchewan. They are not sufficient to warrant commercial operation in competition with the Estevan mines. A small amount, however, has been mined near Deloraine for local use, averaging about 2,300 tons per year for the ten year period 1934-1943.

Oil

Although some rock formations that carry oil in other parts of the world exist in Manitoba, drilling results over the past few years have failed to locate other than traces of oil.

Deep drilling for oil structures in parts of Southeastern Saskatchewan has indicated possibilities for oil accumulation, and the Post-War Reconstruction Committee of the Manitoba Government has recommended that the Government put down a deep test hole in the near future in Southwestern Manitoba.

Natural Gas

Natural gas has not been discovered in any commercial quantity in Manitoba. Some occurrences are known to exist in a number of

places, notable south of Treherne and Rathwell, where the gas is used for domestic purposes. The amount produced during recent years has varied from 180 to 600 thousand cubic feet per year.

Gypsum

Gypsum is found in a number of localities in Manitoba, but only two areas have been exploited - Gypsumville and Amaranth. Beds outcrop northwest of the narrows of Lake St. Martin, immediately north and northeast of Gypsumville. Deposits here are extensive, covering 4-1/2 square miles of surface exposure. The average depth is about 15 feet. In the Amaranth district, about 40 miles north of Portage La Prairie, outcrops do not occur and the gypsum beds are found at about 100 feet below ground level and extend to a depth of about 38 feet. In both districts the quantity of gypsum is very large - sufficient to supply the market for many years.

The gypsum at Gypsumville was first quarried in 1901 and the operation has been continuous since that time. Since 1928 the quarry has been operated by the Gypsum, Lime and Alabastine, Canada, Limited. The Amaranth mine was opened in 1930 by Western Gypsum Products Limited. Both companies ship the gypsum to their respective mills at Winnipeg, where gypsum products are manufactured.

The production of gypsum in Manitoba and Canada is shown for a number of selected years:

	<u>Gypsum Production</u>			
	Manitoba		Canada	
	<u>Tons</u>	<u>\$</u>	<u>Tons</u>	<u>\$</u>
1929	67,269	\$ 631,051	1,211,689	3,345,696
1933	6,830	65,471	382,736	675,822
1939	15,961	98,578	1,421,934	1,935,127
1940	23,108	137,051	1,448,788	2,065,933
1941	27,601	162,822	1,593,406	2,248,428
1942	29,218	179,780	566,166	1,254,182
1943	37,989	380,529	446,848	1,381,468
1944	38,330	368,498	596,164	1,511,978

The production has increased sharply each year since 1939 in Manitoba, but has dropped in Canada to a marked extent since 1941 due, almost entirely, to the drop in production in Nova Scotia where the crude gypsum is largely exported to the United States.

The use of gypsum products in the building industry, due to their lightness, durability, fire-resisting and acoustic properties, has made rapid progress.

The market for Manitoba gypsum is expected to continue at a high level until the backlog of building is eliminated and the demand for gypsum products falls off. No export market for gypsum to the United States has been developed.

Further market details are dealt with under the gypsum products industry.

Salt

Beds of rock salt have not as yet been discovered in Manitoba but saline waters are common in springs and occur in some wells.

The salt springs appear throughout a narrow strip of country extending some 320 miles in length and 40 miles in width in a southeasterly direction from Carrot River at The Pas to the Red River Valley east of the Pembina Hills. The springs issue from Devonian limestones and dolomites and are usually found close to the base of the escarpment which extends from the Pasquia to the Pembina Hills. The most important occur in the upper beds of the Manitoba formation on the west side of Dawson Bay on Lake Winnipegosis and on Red Deer River. A few springs are known west of Lake Manitoba near Crane Lake and Westbourne, and some appear in Red River Valley near La Salle and Morris. The dissolved salts in the springs on the west side of Lake Winnipegosis average about 5.5% of sodium chloride and those

in the southern areas much less, as against a saturated brine of about 25%.

Wells or bore holes have struck salt water at Jamestown, Deloraine, Morden, Manitou, Neepawa, Gladstone, Rathwell and Winnipeg. The brines as a whole are relatively weak. The brine from the well at Neepawa contains about 15% sodium chloride and is the most concentrated yet discovered. In this well strong flows were encountered at 1,185 and 1,460 feet.

Salt, sodium chloride, was first produced in Manitoba about 1820 or earlier, in the Winnipegosis area. Methods were crude and production small. During the period 1820-1874, 500-1,000 bushels per year of salt were produced. By 1889 production for sale was discontinued. From 1890 to 1930 the several attempts which were made to produce salt commercially met with little success. In 1931 production was started from the well at Neepawa. In 1932 production amounted to about 500 tons. A modern plant has since been erected and, in 1944, the output was about 27,300 tons.

The salt industry is covered under the manufacturing industrial section of the report.

Stone

Limestone

The larger part of all stone quarried for all purposes in Manitoba is limestone. It is used as building stone, road metal and ballast, for the production of lime and cement and for chemical and metallurgical purposes.

The purest known limestone in Manitoba occurs in the locality of Steep Rock. Other limestones, containing a relatively low content of magnesia, are found at such localities as Oak Point, Elm Point,

Spearhill (Moosehorn), Winnipegosis, Union Point and Point Wilkins. Dolomitic limestones are found at Stonewall, Inwood, Gunton, Arborg, Broad Valley and at Grand Rapids and elsewhere in the Saskatchewan Valley.

Of the above localities, quarries are now in operation at Steep Rock, from which is obtained the stone used for the production of cement at Fort Whyte, near Winnipeg, and at Moosehorn, Stonewall and Inwood where the stone is used for the production of lime. The production of cement and lime is covered under the manufacturing industrial section of the report.

The chief source of limestone which is suitable for the production of blocks of dimension stone is found at Garson (Tyndall). Other localities are East Selkirk and Lower Fort Garry. The Garson or Tyndall limestone is a limestone with a pleasing mottled effect produced by blotches of buff or blue dolomitic rock in the light grey limestone. It is recognized as one of the most attractive building stones in Canada. The only other provinces producing block limestone for building purposes are Ontario and Quebec.

Owing to the war-time curtailment of construction of buildings requiring cut stone, there has been little production in Canada in recent years, and the quarries at Garson have been more or less inactive.

Due to the backlog of construction requiring such stone, the demand in the immediate future should be relatively high, and it should be possible for Tyndall stone to obtain a fair share of the Canadian market. The chief competitor in the West will be Indiana limestone. Cut stone, however, is a high priced building material and the market is, of necessity, limited and the industry vulnerable during periods of construction inactivity.

The recent price range has varied from 50¢ to \$1.00 a cubic foot F.O.B. quarry, depending on the size of block and grade of stone.

Granite

Granite and related rocks are abundant as bedrock in Pre-Cambrian areas, and prospecting for granite deposits suitable for building and monumental use has been active.

The most promising deposits of grey and black granite appear to be in the West Hawk Lake area, of red granite, at Lac du Bonnet and Braintree.

There are two quarries now active but only a few hundred tons per year are quarried.

Practically all the granite used for monumental purposes is imported into the province, chiefly from Western Ontario and Eastern Canada. Prior to the war an appreciable amount of granite, black and red varieties, was imported from Finland and Sweden.

There is a relatively small market for monumental stone in the local and prairie market and, unless a very fine stone of outstanding quality is discovered which can compete in the Eastern Canadian market, the production of stone for monumental purposes will, of necessity, be relatively small. In the structural stone market, it is doubtful if granite can compete with Tyndall limestone.

Marble

A number of highly coloured marbles are available in Manitoba. Deposits of interest are located at Mile 40 on the Hudson Bay Railway, at Old River near Gimli and at Fisher Branch.

The demand for coloured marble is small and the production in Manitoba has been negligible. A quarry at Fisher Branch is operated occasionally. It is doubtful if the market for marble available will justify a large development.

Sandstone

The only known occurrence of sandstone suitable for building purposes is in the neighbourhood of Boissevain. It has found some local use as a building material.

The production of stone for all purposes other than that used for lime and cement production is shown below over a number of years. With the exception of a small amount of granite and marble, the production is limestone:

	<u>Manitoba</u>		<u>Canada</u>	
	<u>Tons</u>	<u>\$</u>	<u>Tons</u>	<u>\$</u>
1928	235,864	608,217	8,253,934	10,272,301
1930	147,078	1,085,479 ^x	9,994,506	13,034,209
1933	33,190	74,227	2,939,574	2,996,576
1936	49,506	71,765	4,981,665	5,128,739
1937	41,191	65,228	6,935,612	6,939,360
1938	39,378	101,617	5,116,022	5,556,026
1939	36,143	83,948	5,443,522	6,455,696
1940	48,706	78,440	7,447,665	7,398,959
1941	38,347	64,898	7,940,801	8,000,684
1942	43,488	71,966	7,978,066	8,746,594
1943	37,974	50,784	7,222,950	7,964,179
1944	31,929	53,554		

x - The high dollar value was due to the fact that a large proportion of stone production was Tyndall cut stone which was used in several large Alberta buildings.

The imports and exports of stone for some years are shown:

	<u>1938</u>	<u>1939</u>	<u>1942</u>	<u>1943</u>
	<u>\$</u>	<u>\$</u>	<u>\$</u>	<u>\$</u>
Imports	768,412	963,560	1,008,189	1,110,903
Exports	225,586	215,860	66,751	61,108

Clays and Shales

Clays are classified as primary and secondary. Primary clays are those formed from the weathering of feldspars and which remain at the point of formation. Secondary clays are those which have been transported by water, glacier or wind. The main impurities in the primary clays are quartz and undecomposed particles of feldspar and, in secondary clays, limestone powders, hydrated oxides, mud and organic impurities. Generally, most of the white clays (china or kaolin) are of secondary origin. The purer deposits of secondary clays are more plastic than china clay and are known as ball clays. Shales are consolidated beds of clay or silt.

Practically all the known clays of Manitoba are secondary. The Punk Island clay is considered primary in character. The classification generally used in Manitoba is that of surface and older clays, the latter being mainly cretaceous clays and shales. The china-like clay of Punk Island and the stoneware grade clays of Swan River and Saskatchewan River come under this classification.

There are at present no known commercial deposits of high grade fire, ball or stoneware clays in Manitoba. A survey carried out by the Department of Mines and Natural Resources in 1931 indicates that the deposit of kaolin on Punk Island was of much smaller size than previously thought - only about 3,000 tons; that the overburden greatly exceeds that of kaolin; and that the latter could not be removed without contamination. It is suggested that further investigation of the Island might possibly reveal kaolin in commercial quantity. The stoneware grade clay near Swan River is present in considerable quantity, but its location is rather difficult of access.

Surface clays of varying composition are distributed widely throughout Manitoba and are satisfactory for the production of good quality common brick. Further development is required if imported face brick is to be displaced from the local market.

Cretaceous shales, known as Pierre and Niobrara, extend from the International Boundary northwestward along the base of the Pembina, Riding, Duck and Porcupine Mountains. Face brick tile and a few sewer pipes have been made in the past from these shales, but the quality was not always satisfactory. Niobrara shales are considered to be somewhat superior to Pierre but, in general, both shales are highly carbonaceous and care is required in burning. It has been suggested that mixtures of the two shales with some surface clay might produce better results.

The production and the future possibilities for the brick and tile industry are dealt with in the manufacturing industrial section.

Bentonite

The occurrence of bentonite in the Pembina Valley was first noted in 1914, but it was not until 1927 that the beds of bentonitic clays were definitely discovered. The discovery caused considerable interest and many samples were tested. The National Research Council in 1937 reported favourably on the clay in the non-activated and activated state, in particular for the refining and bleaching of petroleum and fatty oils.

The deposit near Morden was first opened up in 1937, but no serious development took place until 1940 when the Pembina Mountain Clays Limited was incorporated. This company operates a crushing plant at Morden and an activating plant in Winnipeg.

The deposit of bentonite which is from 3 to 5 feet thick consists of alternate layers of yellow bentonite 3 to 10 inches in thickness interspersed or alternating with 2 inch layers of dark coloured bentonitic carbonaceous clay. The layers vary somewhat in their properties. The raw white bentonite is taken from the deposit and shipped to Winnipeg for processing. Practically all the production is being activated and shipped to Ontario for use in the oil refineries. Other markets for the bentonite are packing plants, soap and paint manufacturers, pulp and paper plants, foundries and others.

Other known Canadian bentonite deposits occur in Saskatchewan, Alberta and British Columbia. Some 85% of Canadian production in 1944 came from the Morden deposit.

The following table shows the production of bentonite in Canada.

Production of Bentonite in Canada

	<u>Manitoba</u>		<u>Alberta</u>		<u>British Columbia</u>		<u>Canada</u>	
	<u>Tons</u>	<u>\$</u>	<u>Tons</u>	<u>\$</u>	<u>Tons</u>	<u>\$</u>	<u>Tons</u>	<u>\$</u>
1937	132	1,154	-	-	31	817	163	1,971
1938	-	-	1,136	3,444	43	215	1,179	3,659
1939	99	591	889	2,850	-	-	988	3,441
1940	710	2,023	714	2,240	45	225	1,469	4,488
1941	760	1,330	1,317	5,882	95	618	2,172	7,830
1942	660	38,800	956	5,404	-	-	1,616	44,204
1943	(a)	110,428	1,080	5,262	(a)	1,357	(a)	117,047
1944	(a)	160,268	(a)	(a)	(a)	(a)	3,500	163,174

(a) Not available

The consumption of bentonite in Canada in 1943 was approximately 13,000 tons distributed as follows:- Of the total used some 80% was imported.

Steel Foundries	3,200 tons
Iron Foundries	1,600 "
Refineries (mostly activated)	6,000 "
Polishes and Cleansers	850 "
Pulp and Paper	250 "
Miscellaneous	400 "
Crude for Oil Well Drilling	1,080 "
	<hr/>
	13,180 tons

The chief market for both natural and activated bentonite is in Eastern Canada where keen competition is met from the United States from activated clays of the "Filtrol" type and natural Wyoming bentonite.

Prices during the period 1943 - 1945 were as follows:-

Wyoming (U.S.A.) standard 200-mesh bentonite bagged sold at \$9.50 per ton f.o.b. plant, crushed at \$7.00 in bulk. Special grades were quoted at \$11.00 to \$16.50. In 1943 the average unit value of production in the Wyoming field was \$8.73 per ton. Canadian quotations, for standard Wyoming-type bentonite were \$27.00 - \$30.00 per ton, f.o.b. Montreal and Toronto. Prior to the war the prices were \$24.00 - \$25.00.

Crude Alberta bentonite for oil well drilling sold at \$5.00 per ton f.o.b. mine. Manitoba activated bentonite cost \$66.00 - \$68.00 per ton f.o.b. Eastern Canadian points, as compared with \$75.00 - \$80.00 per ton for U.S. imports of the Filtrol type.

The present freight rate to Southwestern Ontario on raw bentonite is \$8.50 per ton and on activated bentonite \$12.60 per ton. The activation of bentonite requires sulphuric acid and cost of acid

is an important item in the process. Unless a cheaper supply of acid can be developed in Manitoba, activation of the crude bentonite in Eastern Canada, where it is largely used may be necessary.

Sand and Gravel

Sand and gravel deposits are widely spread over all parts of Manitoba. They occur as beaches of ancient glacial lakes. In the beaches, principally along the Manitoba escarpment, there is a certain uniformity of texture but, in the ridges, east of the Red River, sand and gravel succeed each other in sharpest contrast. The pebbles are mainly granite and limestone, the percentage of limestone increasing westward.

Most of the gravel and sand is used on roads, railway ballast and in concrete. Gravel pits are worked throughout Manitoba, the most extensive operations being in the Bird's Hill Ridge. Sand for concrete and mortar is found at localities such as Bird's Hill, Marchand, St. Annes, Smith's Siding and Molson. Sand suitable for the production of sand lime brick is found at Beausejour, Marchand and elsewhere.

Despite the decline in general construction during the war years, building of camps, airports and other military facilities created a substantial demand for sand and gravel. It is anticipated that the backlog of road improvement and construction will entail a heavy demand for sand and gravel, with increased production required.

The production over a number of years in Manitoba and Canada is shown in the following table.

Production of Sand and Gravel

	<u>Manitoba</u>		<u>Canada</u>	
	<u>Tons</u>	<u>\$</u>	<u>Tons</u>	<u>\$</u>
1929	1,782,085	322,430	27,846,945	7,317,814
1932	440,309	188,974	14,469,942	4,480,596
1934	334,026	95,426		
1935	1,399,659	404,730	21,213,489	6,389,440
1936	1,852,606	545,130	22,124,160	6,921,399
1937	1,380,957	551,464	27,001,300	10,492,696
1938	1,216,084	645,812	32,223,882	12,002,554
1939	1,363,595	514,404	31,294,431	11,241,020
1940	1,851,645	839,993	31,375,415	11,759,245
1941	1,503,900	429,996	31,604,806	10,375,723
1942	1,443,000	427,150	26,349,907	9,005,414
1943	1,048,673	293,938	25,744,469	9,005,857
1944	1,102,448	296,086		

Silica Sand (Sandstone)

There are three sandstone formations in the province, the Winnipeg sandstone exposed at Elk, Deer, Black and Punk Islands in Lake Winnipeg; the Dakota sandstone showing at the south end of Swan Lake, on Swan River, Steep Rock River and Red Deer River; and the Fox Hill sandstone near Boissevain. The Dakota sandstone is friable and, with the exception of the Swan River deposit, not very accessible. The sandstone near Boissevain, as mentioned elsewhere in this report, has been used locally as a building stone.

The most notable deposit of sandstone or sand in Manitoba is that located on Black Island in Lake Winnipeg. The deposit is now inactive but during past years it was developed as a source of silica sand and an appreciable quantity used by glass companies at Winnipeg and Redcliff. A small tonnage was used by iron and steel foundries at Winnipeg and Selkirk. The sand was not washed or screened.

The sand is fine-grained sand, loosely bonded with an argillaceous bond. It breaks regularly into its natural grain, the greater part being between 48 and 150 mesh. The impurities are chiefly iron oxide and argillaceous material which are either present in the bond, or as a coating on the quartz grains. The grains are fairly well rounded and generally white in colour especially after washing. Various analyses show a silica content of 95.5 to 98.5%, an iron oxide content of 0.31 to 0.09% and an aluminium oxide content of 2.20 to 1.13%. The aluminium oxide is easily removed by washing. Washing and classifying tests carried out by the Department of Mines, Ottawa, indicate that the iron oxide content can be reduced to 0.020 to 0.25% which meets the specification required for use in the manufacture of white glass. The sand, which is largely used in Canada for the production of white glass, comes from Ottawa, Illinois, and is commonly called Ottawa silica sand. Black Island sand, properly washed and screened, compares favourably with Ottawa sand, both as to iron content and grading,

The sandstone outcrops on both the southeastern and north-western shores of Black Island. The beds are much thicker along the southern shore and are exposed for a distance in excess of 7,000 feet. The overburden is heavy in places but large tonnages are

obtainable without excessive stripping.

As has already been indicated, the major market for high-grade silica sand is in glass manufacturing, and the large glass plants of Canada are located in Ontario and Quebec. Silica sand from Black Island has a freight disadvantage of from \$4.00 to \$6.00 per ton as against Ottawa silica sand in this market. Glass is also manufactured at Redcliff, Alberta, this plant using some 9,000 tons of silica sand per year. Black Island sand would have a freight advantage in this market of some \$3.00 to \$4.00 per ton as compared with Ottawa sand.

Silica sand is a low cost commodity and to obtain low costs large scale production is required. Until a larger market for silica sand is developed in the west, large scale development of the Black Island sand deposit seems doubtful,

The combined production of quartz and silica sand in Canada and the imports of silica sand are shown for a number of years.

	Production		Imports of Silica Sand	
	<u>Tons</u>	<u>\$ Value</u>	<u>Tons</u>	<u>\$ Value</u>
1939	1,582,935	1,100,214	167,721	349,256
1940	1,858,302	1,203,527	278,727	556,683
1941	2,052,878	1,366,187	421,143	782,977
1942	1,738,174	1,538,162	540,904	1,011,476
1943	1,776,749	1,608,448	509,043	1,011,117
1944	1,740,262	1,658,409	457,603	914,390

The price of Ottawa silica sand is approximately \$1.50 per ton f.o.b. Ottawa, Illinois, and the freight rate to Winnipeg about \$6.60 and to Redcliff about \$7.85 per ton.

Foundry Sands

As noted previously the amount of foundry sands used in Manitoba is relatively small only amounting to a few thousand tons annually.

A survey of the foundries indicates that comparatively little local sand is being used, the majority being imported from the United States. Some moulding sand from Mile 80 on the Greater Winnipeg Water District Railway and from Melbourne is being used and some core sand from Beausejour and Victoria Beach. Other known deposits which are claimed to be satisfactory for some foundry purposes are located at Virden, Swan River and Marchand. There is no record of their being used.

The moulding sands largely used are imported from Kerrick, Minnesota and Zanesville, Ohio and the core sand from St. Paul, Minnesota and Bay City, Wisconsin. Existing deposits and the volume of requirements have not justified any substantial development.

Feldspar

There is little information available with reference to the quantity and quality of feldspar in Manitoba. It is found in the pegmatite dykes carrying lithium, beryl and other rare minerals.

In 1930 about 600 tons were shipped from the Pointe du Bois area to Winnipeg for the use in stucco and similar purposes. During the period 1933 - 1936 about 5,250 tons were shipped from the Greer Point Mineral claim, near Pointe du Bois, to Minnesota for use in the production of white porcelain. The only other recorded production is 78 tons in 1938 and 40 tons in 1939.

With the exception of the above the entire Canadian production has come from Ontario and Quebec. During the period

1940 - 1944 the average annual production amounted to about 23,400 tons of which somewhat more than half was exported in the crude form to the Eastern United States.

The Canadian market is largely in the east. During the last few years the annual consumption has amounted to about 10,000 to 12,000 pounds. It is used in the following industries - abrasives, pottery, iron and steel, soap and cleansers, glass and enamelling. The distribution of the ground spar used in 1943 was as follows - cleansers 45%, pottery 22%, glass 20% and enamel 13%.

The 1944 Canadian price for crude feldspar varied from \$6.00 to \$7.50 per ton f.o.b. rail for domestic mills and export. Ground spar, 200 mesh, sold at \$16.50 to \$20.00 per ton and granular glass spar at \$12.50 per ton f.o.b. mill, car lots.

Number one potash feldspar for the glass industry must have at least 12% potash, (K_2O), not more than 10% quartz and not more than .05% iron oxide. For ceramics the tolerance for iron is 0.15% iron oxide.

Any large scale development in Manitoba will be dependent upon export shipments to the United States to the south.

Peat Moss

Canada with a peat acreage of above 24 million acres has the third largest acreage in the world being only surpassed by Russia and Finland. Every province of the Dominion has beds of peat. Prior to 1939 the production of peat moss in Canada was relatively small, amounting to only a few thousand tons, mostly from bogs in Quebec, Ontario and British Columbia. When the war cut off supplies to United States from Europe, however, the development of Canadian bogs became active.

Manitoba has an estimated acreage of about 320 thousand acres of which about 240 thousand have been surveyed. Extensive beds occur north of Winnipeg River, northwest of Lac du Bonnet, north of the Saskatchewan River on the northwest end of Lake Winnipeg and along the Hudson Bay Railway in Northern Manitoba.

The bogs west of Pointe du Bois contain vegetation which is humified to the extent that, if conditions warranted, the peat might be utilized for fuel. On the whole, however, the peat beds of Manitoba are not suitable for fuel owing to the lack of sufficient humification of the vegetation. Many of the peat areas when drained would appear to offer greater possibilities for agricultural development than for industrial use.

The most promising area investigated is the Whitemouth River valley where about 97 thousand acres of bogs are located, the majority of which are 11 to 12 feet deep. Of these, the Julius bogs situated adjacent to the Canadian Pacific Railway between Molson and Whitemouth are considered the best. Production of peat moss for poultry litter and for use in horticulture, etc., was undertaken from these bogs shortly after the outbreak of war and is being maintained.

The following table shows the production of peat moss in Manitoba and in Canada.

	Manitoba		Canada	
	<u>Short Tons</u>	<u>\$ Value</u>	<u>Short Tons</u>	<u>\$ Value</u>
1940	0		17,180	Not obtained
1941	1,457	32,342	27,810	" "
1942	2,224	55,832	53,510	" "
1943	2,042	72,687	64,360	1,461,422
1944	1,128	41,878	63,149	1,554,606

Of the total Canadian production in 1944, British Columbia produced about 57%, Quebec 22%, Ontario 16%, New Brunswick 3.4% and Manitoba 1.6%.

About 60% of Manitoba's tonnage production is being shipped to the United States, chiefly to Iowa. Some 97% of the total tonnage production in Canada for the years 1943 and 1944 was shipped to the United States mainly for use as horticultural moss and poultry and stable litter.

The distribution of consumption in the United States for various purposes was as follows:

	<u>1939</u>	<u>1940</u>	<u>1941</u>	<u>1942</u>	<u>1944</u>
For Soil Improvement	76%	93%	75%	61%	75%
In Mixed Fertilizers	-	2	20	30	22
Other uses (litter, packing fruits, vegetables, shrubs, etc.)		5	5	9	3

As the market at the present time for peat moss produced in Canada is very largely in the United States some statistics of the imports, production and price fluctuations in that country are of interest.

In the year 1938 imports from Canada amounted to about 3-1/2% of the total. The price varied with the country from which the moss originated, from Canada \$22.85 per short ton; Latvia, \$21.30; Sweden, \$18.66; Germany, \$14.45 and the Netherlands, \$9.83. Germany supplied about 52%, Sweden 21% and Netherlands 9-1/2%.

The imports of peat moss into the United States from Canada and from all other countries are shown in the following table for the years 1937 - 1944. The average price per ton is also shown.

Imports of Peat Moss into the United States

<u>Years</u>	<u>Canada</u>			<u>All Other Countries</u>		
	<u>Short Tons</u>	<u>Value</u> \$	<u>Average Price</u> <u>per Ton</u> \$	<u>Short Tons</u>	<u>Value</u> \$	<u>Average Price</u> <u>per Ton</u> \$
1937	2,974	68,730	23.10	83,897	1,150,397	13.71
1938	3,989	91,167	22.85	65,520	1,001,775	15.44
1939	6,922	147,342	21.28	71,689	1,057,591	14.75
1940	13,122	305,544	23.28	8,567	149,088	17.40
1941	29,198	682,559	23.38	1,144	21,705	18.97
1942	49,100	1,216,961	24.78	136	2,512	18.47
1943	59,427	1,577,388	26.54	Nil	-	-
1944	64,428	1,916,794	29.75	Nil	-	-

Production of Peat Moss in the United States

<u>Years</u>	<u>Short Tons</u>	<u>Value</u> \$	<u>Price per Ton</u> \$
1938	45,933	286,127	6.23
1939	55,483	362,066	6.53
1940	70,097	516,865	7.37
1941	86,503	657,556	7.60
1942	71,500	516,887	7.23
1943	60,002	491,460	8.19
1944	57,987	524,521	9.05

The market for peat moss in Canada is relatively small, amounting to a few thousand tons per year. During the period 1940 - 1944 the average annual consumption was about 2,150 tons. By comparison, the annual consumption in the United States for the same period was 114,242 tons, of which 60.6% was of domestic production. For the period 1935 - 1939 the annual consumption was 120,066 tons, of which only 39.3% was of domestic production.

From the data which have been obtained, it is estimated that a market exists in the United States for some 3,600 tons of Manitoba peat moss per annum. This is about three times the quantity which

is being shipped from Manitoba and considerably in excess of present production. The quality of Manitoba's peat moss is of superior quality to United States domestic production and, for this reason, commands a higher price.

If shipments of high quality peat moss are resumed from Europe at prices comparable to pre-war prices, keen competition in this American market will be felt. As previously shown, the average price of Canadian peat moss in the United States in 1939 was \$21.28 per ton as compared to the average of \$14.75 for all imported European moss, and peat moss in bales from Europe was laid down in Winnipeg at about \$20.00 per ton.

For some years past, consideration has been given to the production of insulation board and pulp and paper from peat moss, and a great deal of investigation work has been carried out by the Industrial Development Board in this connection. Peat moss is not particularly suitable for the manufacture of pulp and paper owing to the relatively low cellulose content. For insulation board manufacture, while undoubtedly suitable insulating boards can be produced from peat moss, its ability to compete with existing production in the market has yet to be shown.

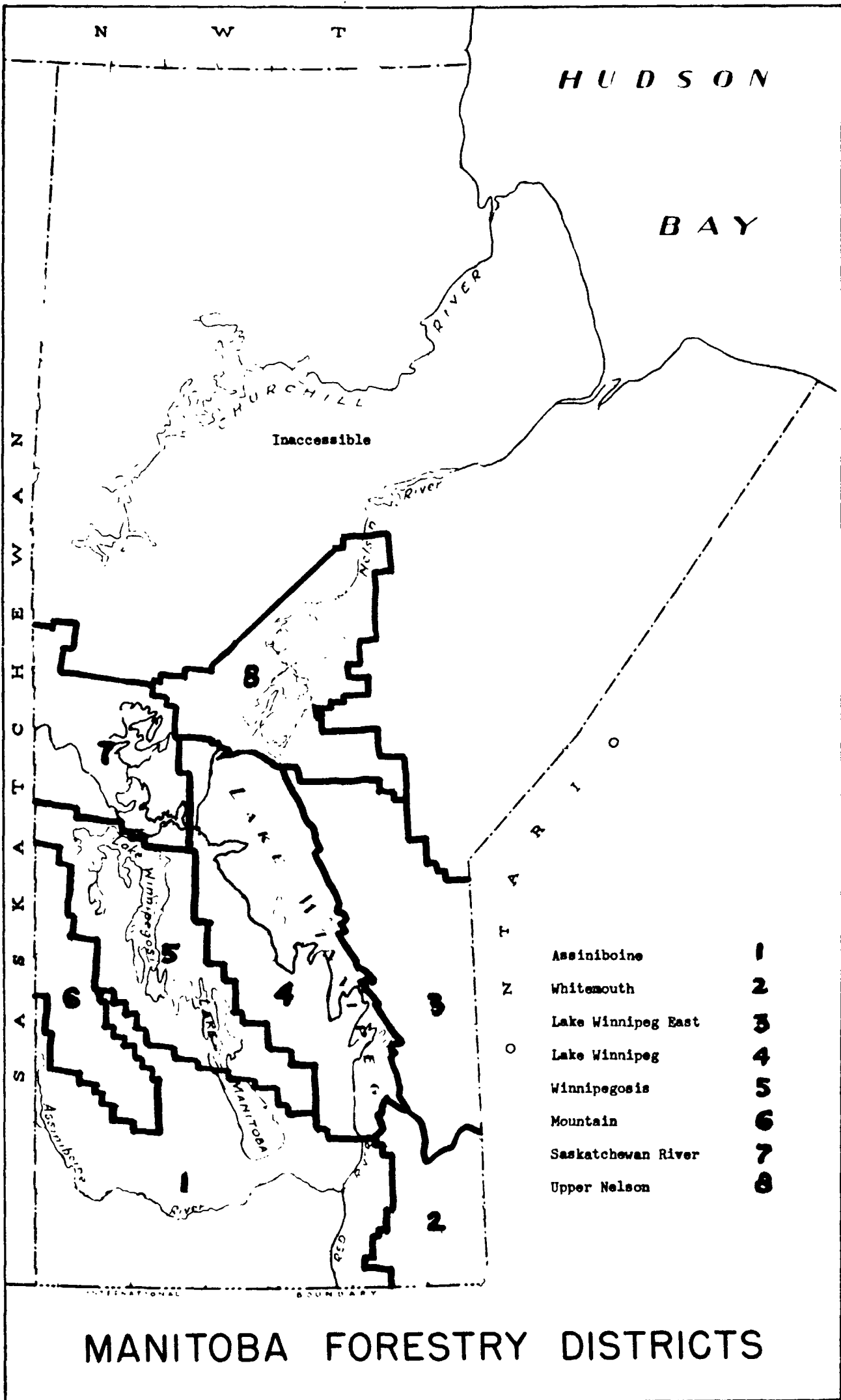
The utilization of peat moss as a source of fuel is largely dependent upon the use of air drying, and Manitoba's climatic conditions are not particularly suitable to such operations. Large scale development for fuel use, therefore, appears improbable.

FORESTRY

Productive forest areas cover 23,476 square miles or 27.5% of the accessible land area of Manitoba. Some 17% or 4,128 square miles of this forest area bear merchantable timber. The non-productive forests which cover an area of 14,791 square miles, (or about 17% of the accessible land area), perform valuable functions in conserving water supplies and in harbouring valuable fur-bearing and game animals.

The accessible forest areas are divided into eight districts as illustrated on the map shown. The estimate, as cords, of merchantable timber in each district is as follows -

<u>District</u>	<u>Hardwood Cords</u>	<u>Coniferous Cords</u>
Assiniboine	2,444,500	21,200
Whitemouth	1,767,000	1,810,000
Lake Winnipeg East	1,842,000	3,808,000
Lake Winnipeg	2,214,000	931,000
Lake Winnipegosis	4,078,000	1,360,000
The Mountain	8,036,000	2,266,000
The Saskatchewan River	536,000	756,000
Upper Nelson	<u>464,000</u>	<u>1,937,000</u>
Total	<u>21,381,500</u>	<u>12,889,200</u>



The percentage distribution by types of wood is shown in the table below.

<u>Kinds of Wood</u>	<u>Percentage of Total Wood</u>	<u>Percentage of Hardwood to Total Hardwood</u>	<u>Percentage of Conifers to Total Conifers</u>
Hardwood	61.6	100.0	
Aspen Poplar	48.9	79.6	
Balsam Poplar	10.3	16.8	
White Birch	1.8	2.9	
Other	0.6	0.7	
Conifers	38.4		100.0
Black Spruce	17.5		45.6
White Spruce	10.7		27.9
Jack Pine	8.7		22.5
Balsam Fir	1.3		3.4
Other	0.2		0.6

The gross value of forest production in Manitoba and in Canada for the years 1939 and 1942 was as follows:

	<u>Manitoba \$</u>	<u>Canada \$</u>	<u>Manitoba % of Canada</u>
1939	5,820,349	466,032,290	1.25
1942	8,807,565	763,988,245	1.15

Included in the above is the production from the woods operations, the sawmills and the pulp and paper mills. By provinces, Manitoba ranks sixth in Canada in gross value of forest production. Manitoba's gross value of forest production represents about 2% of the gross value of all production in the province.

The gross value of the products from the woods operation and sawmills is shown for Manitoba for the years 1939 and 1942.

	<u>Woods Operation</u>	<u>Sawmills</u>	<u>Total Woods Operation and Sawmills</u>
	<u>\$</u>	<u>\$</u>	<u>\$</u>
1939	2,672,501	1,206,727	3,879,228
1942	3,317,696	2,493,695	5,811,391

By provinces Manitoba ranks eighth in gross value of the products from woods operation and sawmills. The production in 1939 represented 1.55% of the Canadian production and in 1942, 1.78%.

The gross value of production of the pulp and paper mills in Manitoba for the years 1939 and 1942, as estimated by the difference between the total gross value of forest production and the total value of woods operation and sawmills, was \$1,941,121 and \$2,996,174 respectively.

Woods Operations

The products from woods operations consist of saw logs, pulpwood, firewood, hewn railway ties, poles, round mining timber, fence posts, rails, etc.

The production of saw logs, pulpwood, firewood and railway ties represents about 98% of the gross value of production with firewood constituting about 50% of the total.

The breakdown of the value of production in Manitoba is not readily available. Shown below is the production in quantities for the years 1939 and 1942 of the four products mentioned above.

	<u>1939</u>	<u>1942</u>
Saw Logs	42,000 M Bd.F.M.	60,700 M Bd.F.M.
Pulpwood	65,600 cords	112,000 cords
Firewood	593,000 cords	600,000 cords
Ties (number)	430,000	180,000

About 90% of the saw logs were spruce and were sawn by local mills.

The pulpwood was largely spruce, being about 99% in both years. In 1939, 28.4% of the pulpwood was exported to Ontario and United States pulp and paper mills and in 1942, 46.2%.

Of the fuelwood production, in 1939, 84.3% came from the farm and in 1942, 79.1%.

Lumber Production

The production of lumber by sawmills operating in Manitoba is shown for a number of years.

	Quantity M.Ft.B.M.	Gross Value \$	Total Gross Value of Sawmill Products \$
1938	52,190	975,979	1,086,538
1939	60,748	1,118,391	1,206,727
1940	77,348	1,606,120	1,736,172
1941	85,918	2,113,386	2,253,209
1942	82,243	2,286,034	2,493,695
1943	71,536	2,379,356	2,538,835
1944	77,021		

About 30% of the production is from Saskatchewan logs, produced by sawmills adjacent to the Manitoba-Saskatchewan border.

It is interesting to note that of the lumber produced, 88% to 90% is from spruce.

The value of the lath and shingles produced in 1938 and 1939 averaged about \$18,390 per year and in the succeeding years about \$31,640. per year. The balance of sawmill products consists of ties, poles, piling, etc. These products are relatively small in

quantity as compared to similar products produced in woods operations.

Information relative to the number of sawmills, the capital invested, the number of employees and the salaries and wages paid is shown for the years 1939, 1941 and 1943.

	<u>Number of Mills</u>	<u>Capital Invested \$</u>	<u>Number of Employees</u>	<u>Salaries & Wages Paid \$</u>
1939	83	1,540,371	547	381,083
1941	142	1,669,987	888	571,402
1943	177	1,718,429	812	580,750

There is only one sawmill in operation with an annual capacity of 20 million feet, board measure, and about six with a capacity of 2 - 4 million feet. The majority are small portable mills. This accounts for the fact that with an increase of the number of mills in 1943 over 1939 of 113.2%, the increase in capital invested was only 11.5% and in quantity of lumber produced only 17.7%. The increase in gross value of production, however, was 106.6%. The number of employees increased 48.2%, while the salaries and wages increased 52.4%.

Pulp and Paper Mills

The pulp and paper industry is represented in Manitoba by one newsprint mill situated at Pine Falls and one board and roofing plant located at Winnipeg.

The Pine Falls newsprint mill was erected in 1927 with a rated capacity of 250 tons per day but a higher production is currently being obtained. About 85% of the pulp produced is ground-

wood, the remainder is chemical pulp produced by the sulphite process. The chief wood used in the mill is spruce with an admixture of poplar and jack pine to the extent of 10% and 5% respectively.

With new methods of producing newsprint now being developed it is possible that more poplar might be utilized.

The board and roofing paper mill commenced operations in 1940. The main raw material used in this plant is black poplar.

There have been numerous attempts to utilize cereal straws in Manitoba in the manufacturing of pulp products but as yet no commercial operation has been successful. There has, however, developed a demand in the Eastern Canadian market for flax straw for special paper. This demand is for the moment limited but might increase with the development of better methods of utilization of the total fibre in the flax straw.

Annual Increment, Fire Losses and Utilization of Merchantable Timber

According to the advice of the Manitoba Forest Service Department the annual increment of softwoods in Manitoba is 41 million cubic feet or about 350,000 cords.

The greatest danger to forests is fire. In 1937 the fire loss of softwoods was in excess of the annual increment and in several other years was in excess of 50% of the increment. The average annual loss of softwoods by fire amounted to 134,000 cords or about 38% of the average annual increment and about 84% of the average annual utilization of 160,000 cords. The average annual surplus of 50,000 cords was due mainly to the small cut or utilization during the depression years.

The rough estimate of the hardwood annual increment is about 2,300,000 cords and the fire loss 81,000 cords. The utilization in the year 1942 - 1943 amounted to about 460,000 cords. Disease and old age balance most of the increment not covered by fire and utilization.

The Forest Service Department are fully aware that the future of the forests depends on the preservation of young growth from fire and that present fire protection is inadequate. Plans which have been made for improving fire protection will be put into effect as soon as possible.

Possibilities for Further Utilization of Forests

Under present conditions there does not appear to be room for another newsprint mill utilizing softwoods in Manitoba as the utilization and fire losses of softwoods have equalled the annual increment during the period 1940 - 1945.

The quantity of poplar wood going to waste annually is large and it is estimated that about one million cords per year might be utilized. About 36% of this is in the Mountain District. Present mills and factories utilizing wood for pulpwood, boxwood or lumber should be encouraged in using larger quantities of poplar.

Uses for Poplar

- Soda Pulp
- Admixture in Newsprint
- Production of Rigid Board
- Production of Matches
- Plywood
- Flooring
- Boxes and Crating
- Rough Furniture
- Railway Ties

The forest reserves of Manitoba are controlled by the Provincial Government, through the Forest Service of the Department of Mines and Natural Resources and are government owned to the extent of 90%. Except in cases where the land is to be cleared for settlement, timbered areas are not sold outright. Rights to cut are sold limited to specified areas and for definite periods of time, but title of the forest remains with the Crown. Most of the saw timber required for industry is cut from Crown timber berths on which the annual licenses to cut are renewable for a definite period of years. Forested areas for the supply of pulp mills may be granted by special legislative action. All timber cutting operations on Crown lands are under supervision so as to avoid waste and unnecessary damage.

FISHERIES

By provinces, Manitoba is only surpassed by Ontario in the production of fresh water fish. In the five year period, 1939 - 1943, Manitoba produced about 35.9% of the Canadian production, the low year being 1939 with 26.9% and the high year, 1941 with 40.7%. In 1939 the Canadian production of fresh water fish was 15.2% of the total fisheries production and, in 1943, 14.5%.

The average yearly production of fish during the period 1938 to 1945 was about 32,500,000 pounds. The peak year was in 1941 when the production was close to 39 million pounds, and the low year, 1945, with a production of about 27,300,000 pounds. Unfavourable weather conditions contributed to the decrease.

The value of fish products of Manitoba and Canada is shown

for a number of years in the following table. The figures represent the total value of fish marketed, whether fresh, dried, canned or otherwise prepared. Manitoba's production thus varied from 4 - 5% of the Canadian total during recent years. It represented from 0.5% to 0.6% of the total gross value of all production in the province.

Value of Products of Fisheries

<u>Calendar Years</u>	<u>Manitoba</u> \$	<u>Canada</u> \$
1925	1,466,939	47,942,131
1929	2,745,205	53,518,521
1932	1,204,892	25,957,109
1933	1,076,136	27,496,946
1935	1,258,335	34,427,854
1937	1,796,012	38,976,294
1939	1,655,273	40,075,922
1940	1,988,545	45,118,887
1941	3,233,115	62,258,997
1942	3,577,616	75,116,933
1943	4,564,551	85,594,544

The total production, the value to fishermen and the value as marketed are shown for the years 1932 and 1938 to 1945.

<u>Fiscal Year Ending</u> <u>April 30th</u>	<u>Pounds</u>	<u>Value to</u> <u>Fishermen</u> \$	<u>Value as</u> <u>Marketed</u> \$
1932	17,383,200	812,456	1,121,269
1938	28,918,200	1,384,206	1,815,347
1939	34,078,600	1,273,939	1,769,474
1940	28,359,200	1,287,110	1,682,689
1941	38,885,600	2,193,876	2,754,254
1942	36,810,800	2,551,272	3,274,887
1943	33,678,800	2,959,921	3,843,331
1944	33,413,900	3,536,378	4,522,203
1945	27,293,100	2,511,035	3,228,099

The increase in the value of production, 1945 excepted, is due to the increase in the price per pound. For example, in comparing the production of 1944 with that of 1939, while the

poundage production decreased about 1.7% the value to the fishermen increased 177.6% and as marketed, 155.6%.

The larger part of the fish catch occurs in the winter season. The breakdown between the summer and winter production is shown for a few years.

<u>Fiscal Years</u>	<u>Pounds</u>		
	<u>Total</u>	<u>Summer</u>	<u>Winter</u>
1939	34,078,660	9,437,960	24,640,700
1940	28,359,200	7,940,100	20,419,100
1943	33,678,800	12,248,600	21,430,200
1945	27,293,100	10,344,600	16,948,500

The production in pounds from different lakes is set out below for the fiscal years 1939 and 1945. It will be noted that in excess of 50% of the production is from Lake Winnipeg.

	<u>1939</u>	<u>1945</u>
Lake Winnipeg	18,533,600	13,753,500
Lake Winnipegosis	6,419,500	6,062,200
Lake Manitoba	7,283,300	4,077,700
The Pas Lakes	1,389,860	3,010,300
All Others	452,400	389,400
Total	34,078,660	27,293,100

A breakdown of the poundage by species of fish is shown for the fiscal years 1939 and 1945. Pickerel and saugers combined represent upwards of 55% of the total catch.

<u>Species</u>	<u>Pounds</u>	
	<u>1939</u>	<u>1945</u>
Goldeye	507,000	253,800
Perch	884,400	623,100
Pickarel	9,470,500	9,011,500
Pike	2,934,800	2,183,400
Sauger	11,589,800	6,160,100
Suckers	1,657,100	2,347,800
Trout	109,100	104,900
Tullibee	3,733,200	2,360,500
Whitefish	3,073,000	4,108,200
Miscellaneous	119,760	139,800
	<u>34,078,660</u>	<u>27,293,100</u>

There are several large filleting plants in Winnipeg and a filleting station at each of the following places - Selkirk, Gimli, Winnipegosis, Whisky Jack and Channel Islands in Lake Winnipegosis. The stations at the last three points are relatively small and do not have artificial freezing plants.

Seven of the nine fish operating companies in Manitoba fillet for export. Two other firms fillet for domestic consumption but their production is relatively small. Authorities in the fishery industry believe that there will be a greater proportion of fish filleted in the future. The establishment of a larger number of small properly equipped filleting plants at the various fishing points in preference to a few large plants has been suggested. The disadvantages would be shortness of the filleting periods and the relatively small quantity of fish that could be filleted at many of the points.

The market for Manitoba's fisheries production is very largely in the United States to which country about 90% is exported. Some of the more important market centres are Chicago, New York and Cleveland. The quality of the fish, on the whole, enjoys a high reputation and there is every reason to believe that the demand for the product will be maintained.

Fish By-Products

There is no recorded production of fish oil, fish meal or fertilizer from the fresh water fish waste in Canada. The commercial utilization of fish waste in Manitoba appears improbable, owing the relatively small amounts available in any one locality.

Hudson Bay Fisheries

A considerable difference of opinion exists as to the quantity and quality of commercial fish in the shore and tributary waters of the Bay. The distances to market would seem to preclude large scale development while the markets can be served from the inland fisheries nearer at hand.

It has been suggested that a white whale industry might be established, but insufficient data are available to assess the possibilities.

* * * * *

The Provincial Department of Mines and Natural Resources is responsible for the administration of the fisheries of Manitoba. Hatcheries are operated by the Department, and large quantities of fish fry, in particular whitefish and pickerel, are liberated each year in the commercially fished waters. Some pickerel fry are liberated in the sport fishing lakes and, recently, trout fingerlings were distributed in a number of lakes.

In addition, the Department is endeavouring to bring commercial fishing under better control by limiting the number of fishermen and their individual production. In this way it is hoped to ensure sufficient parent fish for the propagation of the species.

FURS (TRAPPING AND FARMING) AND GAME

Manitoba's production of furs comprised some 9% of the Canadian total for the 1938 - 39 season, some 11% for the 1942 - 43 season and some 16% in the 1944 - 45 season.

The number and value of raw pelts of all fur-bearing animals produced in Manitoba and Canada for the years 1937 - 45, ending June 30th, as reported by the Dominion Bureau of Statistics, are shown below, the figures including production from both the wild and from fur farms:

	Manitoba		Canada	
	Number of Pelts	Value \$	Number of Pelts	Value \$
1937	546,430	1,632,660	6,237,640	17,526,365
1938	470,450	989,975	4,745,927	13,196,354
1939	475,406	1,267,664	6,492,222	14,286,937
1940	780,108	1,876,649	9,620,695	16,668,348
1941	869,057	2,763,976	7,257,337	21,123,161
1942	844,631	2,596,436	-	24,859,869
1943	878,989	3,242,655	7,418,971	28,505,033
1944	880,622	3,832,641	6,324,240	33,147,392
1945 (Preliminary)	1,511,130	4,818,625	6,918,596	30,646,064

The number of pelts taken in Manitoba and the estimated value are shown below for the years 1939 and 1945 ending September 30th:

	1939		1945	
	Number of Pelts	Value \$	Number of Pelts	Value \$
Weasel	72,523	39,888	124,815	287,075
Squirrel	-	-	445,214	204,798
Muskrat	374,896	329,908	855,724	2,250,554
Mink	13,894	128,520	15,338	429,464
Skunk	10,612	16,979	26,981	62,056
Badger	15	60	513	2,001
Wolf (Including Coyote)	1,879	10,147	5,860	45,363
Fox, Silver	201	2,814	523	7,060
" Blue	7	140	4	100
" Cross	1,363	16,356	3,042	42,588
" Red	4,935	26,304	14,533	116,264
" White	389	4,792	311	7,775
" Not Specified	7	37	-	-

	<u>1939</u>		<u>1945</u>	
	Number of Pelts	Value \$	Number of Pelts	Value \$
Wolverine	25	147	9	144
Beaver	4,966	70,665	5,399	210,561
Otter	1,670	22,545	2,277	61,479
Fisher	214	7,062	418	25,080
Marten	91	1,911	234	11,700
Bear	71	142	87	348
Lynx	515	18,025	311	12,440
Jack Rabbit	-	-	14,886	11,909
	<u>488,273</u>	<u>\$696,641</u>	<u>1,516,479</u>	<u>\$3,788,759</u>

The large increase in dollar value in 1945 is due largely to the increase in the value of the pelt rather than to the increase in the production of pelts. Excluding squirrel and jack rabbit pelts, the increase in the number of pelts in 1945 over 1939 amounted to about 117% while the increase in dollar value was 411%.

The average value per raw pelt for some of the more important species for the years 1939 and 1945 was as follows:

	<u>1939</u>	<u>1945</u>
	\$	\$
Muskrat	0.88	2.63
Weasel	0.53	2.30
Mink	9.25	28.00
Beaver	14.23	39.00
Fisher	30.00	60.00
Marten	21.00	50.00
Otter	13.50	27.00
Red Fox	5.33	8.00

Fur Farms

In fur farming the production of mink largely predominates with the silver fox next in importance. The quality of furs has been considerably improved, particularly mink, and the demand for such has shown marked increase in recent years.

The number of fur farms in Manitoba and the number and estimated value of pelts sold, as shown in the annual reports of the Game and Fisheries Branch, Manitoba, are set out below for the calendar years 1935 and 1939 - 1944:

<u>Years</u>	<u>Number of Farms</u>	<u>Number of Pelts Sold</u>	<u>Value of Pelts Sold \$</u>
1935	447	12,262	297,650
1939	972	52,764	629,793
1940	996	62,318	874,227
1941	845	34,076	422,452
1942	763	80,520	1,111,188
1943	597	46,264	854,579
1944	570	42,852	933,800

It is estimated that the total capital value of the fur farms is in the order of some \$2,000,000.

The types of fur produced by fur farms and their value were as follows for the year 1944:

<u>Species</u>	<u>Number of Pelts</u>	<u>Value \$</u>
Fisher	7	468
Fitch	48	1,071
Fox, Platinum	168	11,454
" Blue	202	10,920
" Cross	44	2,307
" Red	62	549
" Silver	6,361	210,193
" Whiteface	740	27,501
Marten	6	248
Mink	35,214	669,089
	<u>42,852</u>	<u>\$933,800</u>

In addition to the trapping and breeding of fur-bearing animals, a substantial fur processing industry has been developed. The quantity of furs processed and the value are shown for the years 1939 and 1945, ending September 30th.

<u>Year</u>	<u>Number</u>	<u>Value Before Processing</u> \$
1939	488,273	696,641
1940	840,444	1,352,598
1941	857,049	2,036,728
1942	588,678	1,735,895
1943	802,826	2,012,747
1944	359,935	919,152
1945	744,281	1,591,812

As might be anticipated, the market for furs is largely an export market, and the estimated valuation over some years was as follows:

<u>Year</u>	<u>Number</u>	<u>Valuation</u> \$
1939	1,281,298	2,899,914
1940	2,091,395	4,669,770
1943	2,105,353	7,013,228
1944	1,911,297	8,063,522
1945	2,612,777	8,883,775

* * * * *

The fur trapping industry is administered by the Department of Mines and Natural Resources. Very excellent work has and is being done in the rehabilitation of fur blocks, the most notable being Summerberry in The Pas district, and in the establishment of registered trapline districts. These efforts have resulted in the improvement and preservation of fur-bearing animals, in particular the muskrat, and should in the future result in a more uniform production and financial return to the trapper.

Game

Deer are abundant in Southern Manitoba; moose, woodland caribou and elk are abundant in the Duck, Porcupine and Riding Mountains areas. Moose, deer and barren land caribou are found in Northern Manitoba and are reported to be increasing.

Waterfowl are plentiful throughout the province but more recently partridge, grouse and pheasant to a lesser extent have been

declining. This has been chiefly due to adverse weather conditions during the nesting season.

Record of Big Game Taken by Licensed Hunters.
Season 1938 to Season 1944

<u>Season</u>	<u>Deer</u>	<u>Moose</u>	<u>Caribou</u>	<u>Bear</u>	<u>Elk</u>	<u>Revenue from Licenses</u>
1938	3177	150	7	-	-	\$ 14,339
1939	4089	190	22	-	-	19,622
1940	4067	172	6	-	-	17,049
1941	4460	175	15	-	-	20,443
1942	5618	157	7	91	-	27,690
1943	5505	170	18	70	-	30,365
1944	5754	160	11	47	225	38,622

Record of Game Birds Taken by Licensed Hunters.
Season 1938 to Season 1944

<u>Season</u>	<u>Upland Birds Reported Taken</u>	<u>Wild Waterfowl Reported Taken</u>	<u>Revenue from Licenses</u>
1938	33,021	102,862	\$ 18,970
1939	34,403	97,077	20,500
1940	47,269	57,396	22,590
1941	56,439	63,191	23,551
1942	58,340	84,730	22,739
1943	19,983	68,959	18,961
1944	3,767	92,003	22,239

CONSTRUCTION INDUSTRY

The peak year for the construction industry in Manitoba was the boom year of 1929 when gross value amounted to \$38,198,192. During the depression years following 1929 the industry slumped badly. For example, in 1932 the gross value of construction was \$4,503,500. During the war years the industry was greatly stimulated by military construction, the gross value amounting to \$29,609,648 in 1941.

The gross value of work performed by the construction industry in Manitoba and Canada is shown for a number of years. In 1939, gross value in Manitoba was 3.9% of the Canadian total and, in 1943, 3.5%. The 1943 figures are the latest readily available.

	<u>Manitoba</u>	<u>Canada</u>
	<u>Value</u>	<u>Value</u>
	\$	\$
1929	38,198,192	594,144,825
1932	4,503,500	132,872,400
1938	14,247,661	353,223,285
1939	14,848,706	373,203,680
1940	25,232,785	474,122,778
1941	29,609,648	639,750,624
1942	22,091,947	635,649,570
1943	20,190,673	572,426,551

Classification of value into "new construction" and "alteration and repair" for 1939 and 1943 was as follows:

	<u>Manitoba</u>		<u>Canada</u>	
	<u>1939</u>	<u>1943</u>	<u>1939</u>	<u>1943</u>
	\$	\$	\$	\$
New Construction	8,990,968	12,344,763	258,662,409	422,423,651
Alteration & Repair	5,857,738	7,845,910	114,541,271	150,002,900

The classification of the type of construction is not available for Manitoba, but the percentage breakdown for Canada is shown for 1939 and 1943:

<u>Construction</u>	<u>1939</u>	<u>1943</u>
Building	42.6	52.8
Street, Highway, Power, Water Etc.	40.3	32.6
Harbour and River	4.8	2.9
Trade (Brick-laying, plumbing, etc.)	12.3	11.7

The number of employees, salaries and wages paid and cost of materials used in the construction industry are shown for Manitoba and Canada for the years 1939 and 1943:

	<u>Manitoba</u>		<u>Canada</u>	
	<u>1939</u>	<u>1943</u>	<u>1939</u>	<u>1943</u>
Employees	4,997	5,192	148,414	155,300
Salaries & Wages	\$5,581,860	\$ 8,352,729	\$153,442,443	\$246,836,035
Cost of Materials	\$8,279,246	\$10,136,198	\$189,497,342	\$278,888,384

Although in 1943 the number of employees in Manitoba increased only 3.9% over 1939, the salaries and wages increased 49.6%. The corresponding percentages for Canada are 4.6 and 60.9.

Building Permits

Municipalities and the value of building permits for the years 1940 - 1945 were as follows:

	<u>1940</u>	<u>1941</u>	<u>1942</u>	<u>1943</u>	<u>1944</u>	<u>1945</u>
	<u>\$</u>	<u>\$</u>	<u>\$</u>	<u>\$</u>	<u>\$</u>	<u>\$</u>
Brandon	360,446	258,648	270,120	190,259	400,675	229,299
Brooklands	9,327	8,485	15,975	9,715	30,175	53,685
Dauphin	22,905	76,755	60,830	28,357	101,436	98,810
North Kildonan	22,200	42,240	51,965	18,140	68,065	105,670
Portage la Prairie	189,850	114,450	43,440	68,330	102,385	83,526
St. Boniface	1,051,260	929,614	468,886	343,924	1,475,958	1,891,515
Selkirk	34,050	40,500	26,475	19,430	21,705	92,000
The Pas	5,220	5,850	2,365	12,235	10,750	20,525
Transcona	74,303	115,253	75,744	42,005	49,605	627,005
Winnipeg	3,326,450	4,006,850	2,949,750	1,912,500	4,419,475	7,823,725
	<u>5,096,011</u>	<u>5,598,645</u>	<u>3,965,550</u>	<u>2,644,895</u>	<u>6,680,229</u>	<u>11,025,760</u>

The classification of the permits for Manitoba, by type of construction, for 1944 and 1945 is as follows:

	<u>1944</u>	<u>1945</u>
	Value \$	Value \$
Residential	4,189,731	8,252,803
New Construction	3,694,078	7,790,296
Additions, Alterations, etc.	495,653	462,507
Institutional	53,650	271,450
New Construction	17,000	50,800
Additions, Alterations, etc.	36,650	220,650
Commercial	1,484,198	1,629,470
New Construction	918,805	1,097,465
Additions, Alterations, etc.	565,393	532,005
Industrial	758,400	805,437
New Construction	201,800	632,500
Additions, Alterations, etc.	556,600	172,937
Other Building	194,250	66,600
New Construction	159,650	58,250
Additions, Alterations, etc.	34,600	8,350
Total	6,680,229	11,025,760
New Construction	4,991,333	9,629,311
Additions, Alterations, etc.	1,688,896	1,396,449

The future demand for construction work is intimately related to the general prosperity and the general development of the province. Deficiencies of buildings of all types resulting from the war, and in particular, the housing shortage would indicate a considerable period of activity. The longer range outlook is dependent upon the growth of the province, more particularly the development of new areas.

ELECTRIC POWER INDUSTRY

Manitoba's large power resources and hydro-electric installations are discussed under "Power Resources" in Volume II pages 41 to 47.

The value of production of the electric power industry in Manitoba in 1939 was equivalent to about 5.5% of that for Canada and, in 1942, about 4.8%. In relation to the total gross value of all production in Manitoba, the value of production of the industry was equal to about 3.0% of the total in 1939 and 1.9% in 1942.

The gross value of production of the electric power industry is shown for Manitoba and Canada for the years 1937-1942:

	<u>Manitoba</u> \$	<u>Canada</u> \$
1937	7,679,888	143,546,643
1938	7,926,813	144,331,627
1939	8,467,519	151,880,969
1940	8,790,666	166,228,773
1941	9,404,906	186,080,354
1942	9,931,738	203,835,365

CUSTOM AND REPAIR INDUSTRIES

The custom and repair industries, such as laundries, cleaners, repair shops and this general type of service, are well represented in Manitoba. The gross value of these businesses in 1939 was some 6.8% of that of Canada, or somewhat higher than the relative proportion to be anticipated. In 1942 it had declined to about 6%, probably reflecting the higher prevailing prices for most products.

The following table shows the gross value of these businesses in Manitoba and in Canada over a number of years:

	<u>Manitoba</u> \$	<u>Canada</u> \$
1937	9,923,907	145,511,833
1938	9,984,500	146,399,500
1939	11,134,284	163,259,301
1940	10,537,371	180,126,000
1941	11,661,975	199,377,000
1942	12,436,000	205,364,000

TOURIST TRADE

The tourist trade of Canada is big business involving millions of dollars of expenditures yearly. With the exception of war-time curtailment, the trade in general fluctuates with the relative prosperity of the peoples of the United States.

The total expenditures in Canada by tourists or travellers from all countries are shown for a number of years:

	<u>Millions of Canadian Dollars</u>
1929	198.0
1933	89.0
1935	116.0
1937	166.0
1938	149.0
1939	149.0
1940	105.0
1941	111.0
1942	81.9
1943	89.5
1944	119.5
1945	167.4(subject to revision)

The American tourists contribute a very large portion of the expenditures. During the war years, in excess of 93% of expenditures were made by them; in 1938 and 1939, approximately 90%. The expenditures for the years 1938 to 1945 were as follows:

	<u>Millions of Canadian Dollars</u>
1938	134.0
1939	137.0
1940	98.0
1941	107.0
1942	79.0
1943	87.0
1944	116.6
1945	164.4(subject to revision)

Only a small percentage of the tourist trade is shared by the Prairie Provinces. A division on a provincial basis, according to province of entry, of the estimated expenditures of American tourists in Canada during 1945 indicates that only about 4% was spent in the Prairie

Provinces. The following table roughly indicates the provincial distribution of expenditures, no allowance being made for inter-provincial travel by automobile:

<u>Province of Entry</u>	<u>Expenditure</u>	
	<u>Million</u>	<u>Percentage</u>
	\$	%
Maritimes	11.0	6.7
Quebec	28.7	17.5
Ontario	96.4	58.6
Manitoba	3.8	2.3
Saskatchewan	1.3	0.8
Alberta	1.2	0.7
British Columbia (including Yukon)	<u>22.0</u>	<u>13.4</u>
Total	<u>164.4</u>	<u>100.0</u>

During 1945 there were about 17 million non-resident entries from the United States, of which the large majority resulted in local crossings at the border. The number entering for periods of three days or longer is estimated at 2,500,000, or about 13% of the total. This group, however, spent \$138,000,000 - about 85% of the total expenditure. In 1944 the same group, with 1,800,000 entries out of a total of 12.5 millions, spent 88% of the total.

Prior to the war the automobile constituted the chief means of travel, and it is fully expected that the same condition will occur when cars are again plentiful.

The average expenditures per car of motorists of the tourist category entering Canada as a whole and Manitoba were as follows:

	<u>Canada</u>	<u>Manitoba</u>
	\$	\$
1941	35.9	58.4
1942	32.5	50.6
1943	40.4	48.0
1944	42.0	65.35

From the geographical location of Manitoba, it is quite evident that any substantial influx of tourists must come from the North-western Inland Border States and, to some extent, from the Great Lakes States. The majority of tourists now entering Manitoba come from the

former, but the latter, which supply some one-third of the total number of tourists entering Canada, are not largely represented, and it is to this area, therefore, that Manitoba should look for increased tourist volume.

A table showing the number of tourist automobiles entering Canada from the United States follows:

FROM	Number of Foreign Automobiles Entering Canada				
	1938	1939	1941	1943	1944
<u>North Eastern States</u>					
New York	324,877	315,374	290,885	92,302	135,966
Other Eight States	<u>322,484</u>	<u>314,023</u>	<u>287,941</u>	<u>60,105</u>	<u>93,157</u>
	647,361	629,397	578,826	152,407	229,123
% of Total Volume	51.2	49.6	50.2	52.9	52.1
<u>Great Lake States</u>					
Ohio	59,785	65,457	69,580	8,535	15,071
Michigan	273,727	269,419	253,552	72,823	122,844
Illinois	38,723	44,301	34,854	1,754	2,465
Indiana	12,803	14,496	14,247	1,117	1,638
Wisconsin	<u>12,053</u>	<u>13,894</u>	<u>10,792</u>	<u>850</u>	<u>806</u>
	397,891	407,567	383,025	85,079	142,824
% of Total Volume	31.4	32.1	33.2	29.6	32.5
<u>North Western Inland Border States</u>					
Minnesota	22,978	23,888	16,104	2,114	2,965
North Dakota	10,833	11,390	7,228	3,022	4,132
Montana	<u>6,687</u>	<u>7,531</u>	<u>7,393</u>	<u>1,677</u>	<u>2,109</u>
	40,498	42,809	30,725	6,813	9,206
% of Total Volume	3.2	3.4	2.7	2.4	2.1
<u>West Coast States</u>					
Washington	81,557	81,716	62,025	33,816	45,265
Oregon	8,321	7,648	7,527	1,290	1,676
California	<u>28,614</u>	<u>29,177</u>	<u>26,960</u>	<u>1,766</u>	<u>2,569</u>
	118,492	118,541	96,512	36,872	49,510
% of Total Volume	9.3	9.3	8.4	12.8	11.3
<u>Remaining Federal States And Other Countries</u>					
	61,644	71,343	63,952	6,622	8,953
% of Total Volume	4.9	5.6	5.5	2.3	2.0
TOTAL	<u>1,265,086</u>	<u>1,269,657</u>	<u>1,153,040</u>	<u>287,793</u>	<u>439,616</u>

It is quite evident that Manitoba's tourist trade, representing only 2-3% of the total for Canada, has not been developed as fully as it might be. One reason for the low percentage may be ascribed to the fact that the population to the south of the Border is sparse in comparison to that south of Ontario. However, summer and winter resorts in Manitoba, as compared to some of the other provinces, have, as yet, only been developed in a small way. Greater publicity should be given to the many beauty spots in the province. Southeastern, Central and Northern Manitoba abound in lakes and streams, with plenty of fish and game. There are many areas and beauty spots to attract all types of tourists, but a large number of these are inaccessible to the automobile, the mainstay of tourist travel. The further development of parks and privately-owned resorts and the extension of roads further into the north country would stimulate the tourist trade.

The following passage is taken from the 1945 Canada Year Book from the chapter referring to tourist trade: "Manitoba has many areas attractive to the tourist but, as yet, the province has only established one which may be described as a Provincial Park. This is the area set aside in 1930 as the Whiteshell Forest Reserve, a rugged section of the Pre-Cambrian part of Eastern Manitoba, covering 1,088 square miles."

This is a beautiful park abounding in lakes and rivers, and when the motor roads now under consideration are completed within the park, the number of tourists to this district should be greatly increased.

Volume IV

INDUSTRIAL SURVEY

of

The Resources

of the

Province of Manitoba

1947



Prepared for the

INDUSTRIAL DEVELOPMENT BOARD
OF MANITOBA

by

DONALD, ROSS & COMPANY
Montreal

VOLUME IV

I N D E X

MANUFACTURING INDUSTRIES

	<u>Page Nos.</u>
General	1 - 4
Animal Products Industries	4 - 25
Slaughtering and Meat Packing	5 - 13
Butter and Cheese	14 - 19
Leather	20 - 24
Tanning	20 - 21
Footwear	21 - 22
Gloves and Mittens	22 - 23
Miscellaneous Goods	23 - 24
Fur Goods	24 - 25
Fur Dressing and Dyeing	25
Vegetable Products Industries	26 - 57
Flour and Feed Milling	26 - 31
Flour Mills	26 - 30
Feed and Chopping Mills	31
Prepared Stock and Poultry Feeds	31 - 34
Bread and Other Bakery Products	35 - 36
Biscuits, Confectionery, Cocoa and Chocolate	36 - 37
Macaroni and Kindred Products	38
Breakfast Foods	38 - 40
Malt and Malt Products	40 - 41
Breweries	41 - 42
Aerated Waters	43
Miscellaneous Foods	43 - 45
Fruit and Vegetable Preparations	46 - 47
Sugar	47 - 49
Vegetable Oil	50 - 51
Starch and Glucose from Wheat	51 - 52
Dried Alfalfa Meal	52
Industrial Ethyl Alcohol	53
Butyl Alcohol	53
Butylene Glycol	53
Straw Utilization	54 - 57

	<u>Page Nos.</u>
Textile and Textile Products Industries	58 - 70
Men's Factory Clothing	58 - 61
Women's Factory Clothing	61 - 63
Hats and Caps	63 - 64
Bags, Cotton and Jute	65
Awnings, Tents and Sails	66
Woollen Textiles	67 - 68
Cotton	68
Cordage, Rope and Twine	69
Power Laundries and Dyeing Plants	70
Wood and Paper Products Industries	71 - 77
Printing Trades	71 - 72
Furniture	72 - 74
Carriage, Wagons and Sleighs.	75
Boxes, Baskets and Crates	75 - 76
Paper Boxes and Bags	76 - 77
Pulp and Paper Mills	77
Sawmills	77
Iron and Steel Products Industries	78 - 107
Railway Rolling Stock	78 - 80
Primary Iron and Steel	80 - 83
Sheet Metal Products	83 - 86
Farm Implements and Farm Machinery	87 - 91
Aircraft	91 - 93
Machinery	93
Miscellaneous Iron and Steel	94 - 95
Iron Castings	95 - 96
Boilers, Tank and Plate Work	97
Bridge Building and Structural Steel	97 - 98
Automobile Manufacturing and Automobile Parts	99 - 102
Hardware, Tools and Cutlery	102 - 104
Cooking and Heating Apparatus	105 - 107
Wire and Wire Goods	107

Page Nos.

Non-Metallic Mineral Products Industries . . .	108 - 131
Petroleum Products	108 - 109
Clay Products	109 - 115
Brick and Tile	109 - 113
Other Clay Products	113 - 115
Cement	115 - 118
Gypsum Products	118 - 119
Lime	120 - 121
Salt	121 - 122
Glass and Glass Products	122 - 124
Monumental and Ornamental Stone Products .	125
Miscellaneous Products	125 - 126
Rock Wool	126 - 128
Artificial Abrasives and Abrasive Products	128 - 131
Chemical and Allied Products Industries	132 - 148
Paints, Pigments and Varnishes	132
Medicinal and Pharmaceutical Preparations.	133
Toilet Preparations	134
Soaps, Washing Compounds and Cleaning Preparations.	134 - 138
Polishes and Dressings.	138 - 139
Compressed Gases	139 - 140
Adhesives	140 - 144
Miscellaneous Chemical Products	144 - 146
Chemical Fertilizers	146
Heavy Chemicals	146 - 148
Miscellaneous Industries	149 - 156
Brass and Copper Products	149
Electrical Apparatus and Supplies	149 - 152
Jewellery and Silverware.	152 - 153
Beds, Springs and Mattresses	154 - 155
Brooms, Brushes and Mops	155 - 156
List of Manufacturing Industries and Their Degree of Representation in Manitoba . . .	157 - 176
War Plants (Government-Owned)	177 - 179

MANUFACTURING INDUSTRIES

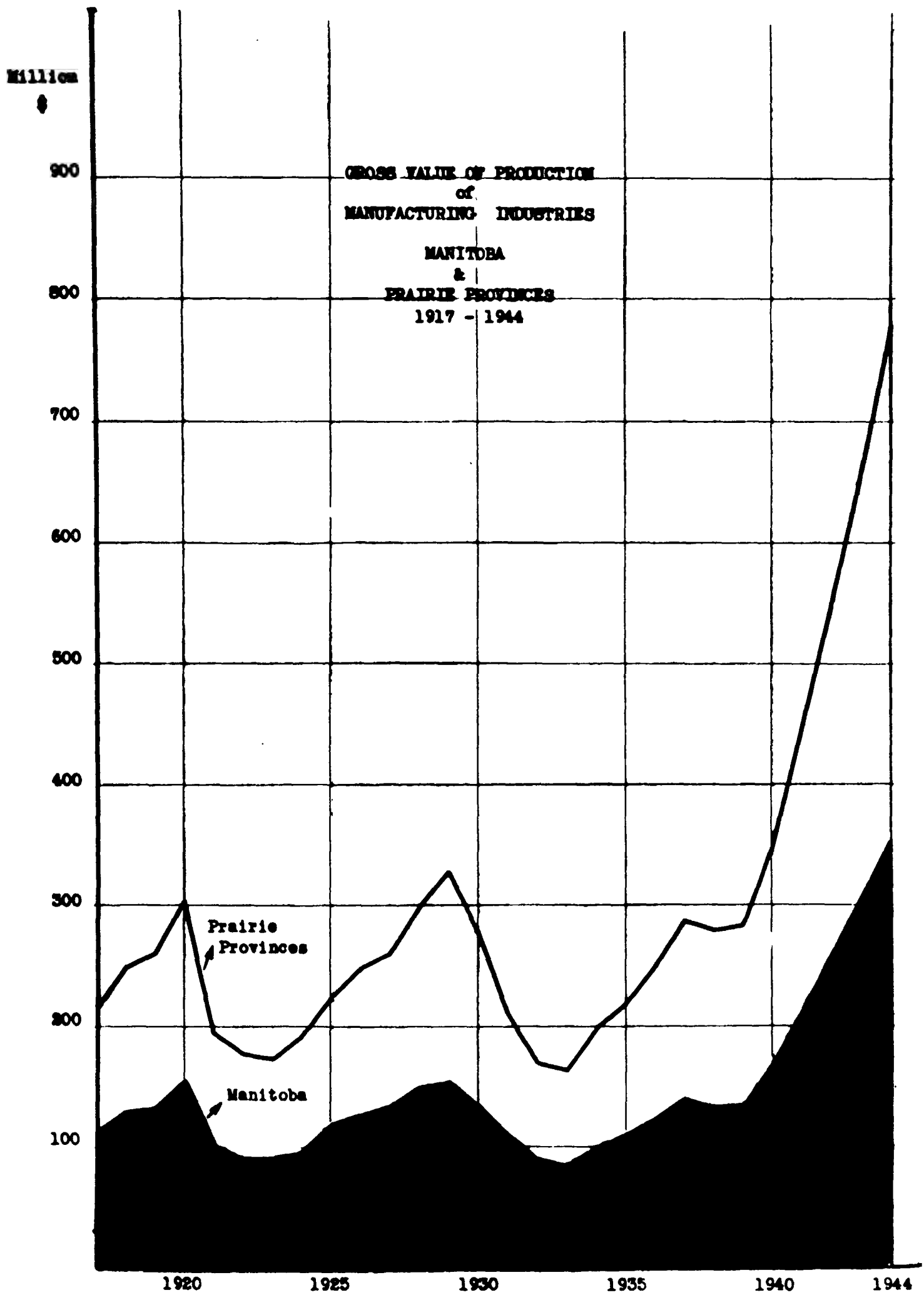
The growth of the manufacturing industries in Manitoba and the three Prairie Provinces combined has followed very closely the general trend of that in Canada as is indicated by the graphs showing the growth in gross value of production of all manufacturing industries. The year 1944 constituted a peak in production.

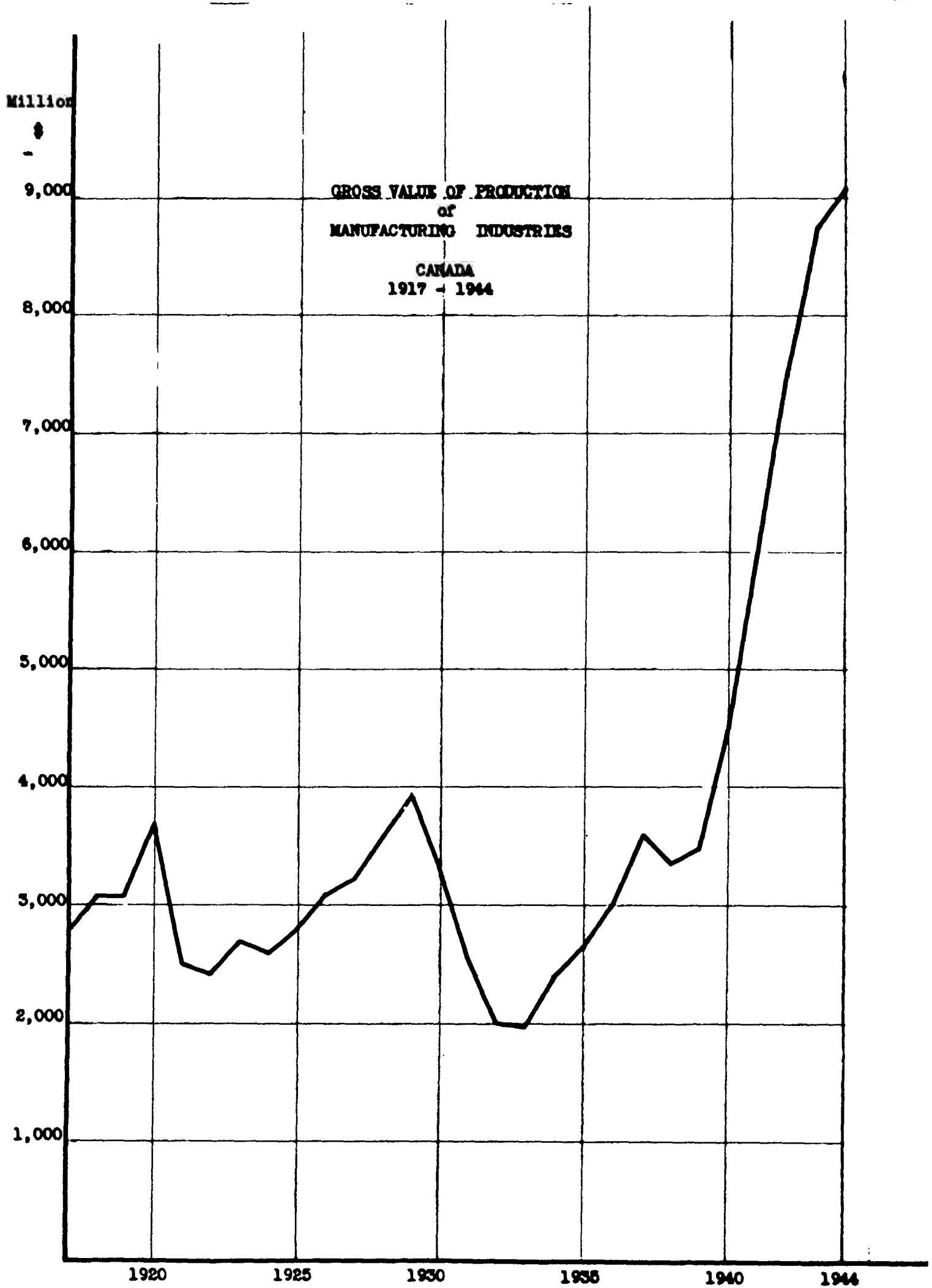
Prior to 1940, 1929 constituted the peak year both for Canada and the Prairie Provinces. In Manitoba production in 1920 was slightly higher than that in 1929. The low point for both Manitoba and all of Canada was in 1933.

The percentage increase in production in certain specified periods in Manitoba, the Prairie Provinces combined and in Canada is shown in the following table and the similarity in trend between Manitoba and Canada will be noted.

	<u>Percentage Increase in Value of Manufacturing Production</u>		
	<u>Manitoba</u>	<u>Canada</u>	<u>Prairie Provinces</u>
1929 over 1917	38.6	37.6	54.6
1929 over 1920	- 0.1	4.7	9.1
1939 over 1917	20.0	23.1	31.7
1933 over 1929	-46.0	-50.2	-49.0
1939 over 1929	-13.5	-10.5	-14.8
1939 over 1933	60.0	77.8	71.2
1944 over 1917	214.5	221.6	264.8
1944 over 1929	133.6	133.7	135.4
1944 over 1933	320.0	364.1	373.3
1944 over 1939	162.3	161.1	176.4

The tables that follow show the gross value of manufacturing production, the capital invested, salaries and wages, number of employees and establishments of the manufacturing industries in Manitoba compared with the Prairie Provinces combined and with Canada for the





years 1939 to 1944. The same information is also shown for Ontario and Quebec for 1939 and 1943.

Manitoba ranks fourth by provinces in the gross value of manufacturing production being exceeded by Ontario, Quebec and British Columbia. Ontario and Quebec combined, however, account for 80 to 81% of the total for Canada. Manitoba's production during the last thirty years has varied from about 3-1/2% to 4-1/2% of the Canadian total, the percentage being higher in the depression years 1931 - 1933. This is primarily due to the fact that in Manitoba manufacturing production is based largely on agricultural production and the industry is not as severely affected during a depression as in the case where production of capital goods predominate. For example the drop in production in Manitoba in 1933 from 1929 was some 46.0%, while in Ontario the drop was 50.2%.

Year	Manitoba		Prairie Provinces		Canada
	Gross Value of Production \$ '000	Percent- age of Canada	Gross Value of Production \$ '000	Percent- age of Canada	Gross Value of Production \$ '000
1938	131,770		279,474		3,337,681
1939	134,294	3.86	282,418	8.12	3,474,784
1940	167,919		351,517		4,529,173
1941	211,535		450,207		6,076,308
1942	259,554		557,914		7,553,795
1943	304,868		668,150		8,732,861
1944	352,335	3.88	780,634	8.60	9,073,693
	Capital Invested \$ '000		Capital Invested \$ '000		Capital Invested \$ '000
1938	114,368		221,924		3,485,683
1939	119,659	3.28	230,598	6.32	3,647,024
1940	132,978		252,117		4,095,717
1941	163,489		301,325		4,905,504
1942	175,902		322,317		5,488,786
1943	173,753	2.75	346,109	5.48	6,317,167
1944	not obtained		not obtained		not obtained
	Salaries & Wages \$ '000		Salaries & Wages \$ '000		Salaries & Wages \$ '000
1938	27,196		48,552		705,669
1939	28,445	3.85	50,769	6.88	737,811
1940	31,941		57,178		920,873
1941	40,894		71,026		1,264,863
1942	51,605		88,141		1,682,805
1943	53,842		99,782		1,987,292
1944	62,758	3.09	113,689	5.60	2,029,621
	Number of Employees		Number of Employees		Number of Employees
1938	23,507		42,314		642,016
1939	23,910	3.63	43,097	6.55	658,114
1940	26,679		48,285		762,244
1941	32,262		57,569		961,178
1942	37,519		65,717		1,152,091
1943	37,003		69,299		1,241,068
1944	40,937	3.34	75,484	6.17	1,222,882
	Number of Establishments		Number of Establishments		Number of Establishments
1938	1,072		2,720		25,200
1939	1,087	4.38	2,785	11.2	24,805
1940	1,171		3,053		25,513
1941	1,184		3,237		26,293
1942	1,287		3,368		27,862
1943	1,245		3,354		27,652
1944	1,290	4.52	3,509	12.3	28,483

	Gross Value of Production \$ '000			Percentage of Canada
	Quebec	Ontario	Quebec & Ontario	
1939	1,045,758	1,745,675	2,791,432	80.3
1943	2,852,192	4,221,101	7,073,293	81.0
Salaries and Wages \$ '000				
1939	223,758	378,376	602,134	81.6
1943	658,324	956,399	1,614,723	81.2
Capital Invested \$ '000				
1939	1,182,538	1,762,572	2,945,110	80.7
1943	2,230,620	2,994,954	5,225,574	82.7
Number of Employees				
1939	220,321	318,871	539,191	81.9
1943	437,247	570,017	1,007,264	81.1
Number of Establishments				
1939	8,373	9,824	18,197	73.4
1943	9,372	10,587	19,959	72.2

Manufacturing in Manitoba is mainly centralized in the Greater Winnipeg area, is fairly diversified but not too well balanced.

Some of the leading industries are meat packing, flour and feed milling, butter and cheese, railway rolling stock, factory clothing (men's and women's), bags (cotton and jute), biscuits and confectionery, bread and other bakery products, printing trades, primary iron and steel, brewing, pulp and paper, smelting, petroleum products, sheet metal products, etc.

In 1943 the first four industries noted above accounted for about 50% of the value of production of all industries, about 28% of the employees, 33% of the salaries and wages and about 25% of the capital invested.

A review of the industries investigated, grouped according to the type of production, follows:

ANIMAL PRODUCTS INDUSTRIES

Slaughtering and Meat Packing

Butter and Cheese

Leather

Tanning
Footwear
Gloves and Mittens
Miscellaneous Goods

Fur Goods

Fur Dressing and Dyeing

Slaughtering and Meat Packing

The origin of the slaughtering and meat packing industry in Manitoba dates from 1898 when a pork packing establishment was erected in Winnipeg. From these small beginnings the industry steadily expanded and, by 1925, had become the largest single industry in the province. By 1939 the value of its production was some 20% of all manufacturing production and, in 1944, this had risen to some 34%. The corresponding percentages for Canada were about 5 and 6 respectively. In salaries and wages paid, the industry ranked second in the province in 1939 with 8.8% of the total for all manufacturing industries in the province and 12.6% in 1944. Similar figures for Canada were 2.3% and 1.9% respectively.

The Manitoba industry consists of 12 establishments, 11 of which are located in the Greater Winnipeg area. In 1944 eight plants were listed as having a production of \$1,000,000 and over; two with a production of \$100,000 and less than \$500,000; and two had a production value of less than \$100,000.

In 1939, Manitoba ranked third by provinces in the value of production of the slaughtering and meat packing industry and second in 1944. The value of production represented 14.4% and 22.0% respectively of the Canadian total and about 48% and 44% respectively of the Prairie Provinces combined. Ontario ranked first in both years with 43% and 29% respectively of the total; Quebec, second and fourth with 20% and 15%, and Alberta, fourth and third with 12% and 19%.

The growth of the industry in Manitoba and Canada since 1925 is illustrated by the following table of the gross value of production.

<u>Year</u>	<u>Manitoba</u> <u>\$</u>	<u>Percentage</u> <u>of Canada</u>	<u>Canada</u> <u>\$</u>
1925	18,860,389	11.5	163,816,810
1929	22,370,467	12.0	185,842,902
1930	19,745,659	12.0	164,029,953
1932	13,011,468	14.2	91,246,523
1933	13,616,669	14.7	92,366,137
1934	19,736,903	16.1	122,112,406
1936	26,699,357	17.0	156,971,640
1937	29,204,985	16.1	181,419,311
1939	26,779,130	14.4	185,196,133
1940	37,645,351	16.9	228,500,487
1941	48,944,278	16.5	296,240,415
1942	68,767,296	18.6	369,047,175
1943	96,073,714	22.0	437,228,577
1944	119,852,480	22.0	543,034,100

It will be observed that the industry in Manitoba has grown at a much more rapid rate than in the Dominion as a whole. The value of production in Manitoba in 1944 was about 4-1/2 times that in 1939, while in the Dominion it was somewhat less than three times. The heavy production in recent years has been largely due to conditions created by the war. The year 1944 constituted a peak in the value of production of the industry.

The number of plants, capital invested and other statistics of the industry are shown for Manitoba, the Prairie Provinces combined, and Canada for the years 1939, 1942 and 1944:

	No. of Plants	Capital Invested \$	Number of Employees	Salaries and Wages \$	Cost of Materials and Animals Slaughtered \$	Gross Value of Products Sold \$
Manitoba						
1939	9	11,236,135	1,731	2,524,479	23,104,865	26,779,130
1942	11	13,644,100	2,820	4,428,640	56,000,885	68,767,296
1944	12	-	4,903	7,944,250	98,648,494	119,852,480
Prairies						
1939	28	22,990,695	4,219	5,847,072	47,168,177	55,512,058
1942	32	31,900,921	7,288	10,949,579	133,477,106	159,028,040
1944	32	-	11,551	18,363,230	227,399,330	273,197,731
Canada						
1939	150	68,660,761	12,765	17,109,682	154,692,370	185,196,133
1942	148	96,787,894	17,397	26,695,879	310,446,760	369,047,175
1944	153	-	23,867	38,697,789	458,484,382	543,034,100

The following breakdown shows, by groups, the value of the principal products sold and the percentage of each group to the total for Manitoba and Canada for the years 1939 and 1944:

	Manitoba				Canada			
	1939		1944		1939		1944	
	Value \$	% of Total	Value \$	% of Total	Value \$	% of Total	Value \$	% of Total
Meats and Poultry, Fresh	14,834,772	55	48,447,386	40	85,134,044	46	218,664,776	40
Meats & Poultry, Cured & Canned	8,726,731	33	60,683,819	52	71,336,530	38	259,701,747	48
Lard and Shortening	1,114,863	4	3,801,596	3	14,094,823	8	30,477,035	6
Hides and Skins	1,287,705	5	2,905,278	2	6,212,985	3	12,540,121	2
All Other Products	815,059	3	4,014,401	3	8,417,751	5	21,650,421	4
	\$26,779,130	100%	\$119,852,480	100%	\$185,196,133	100%	\$543,034,100	100%

The first two groups represent about 90% of the total value of production. A breakdown of these two groups follows showing the quantity and value of various items in the years 1939 and 1944 for Manitoba. The items represent about 99% of the total value in each group. The percentage increases in 1944 over 1939 are also presented together with the corresponding percentage increases for Canada.

							Percentage Increase of 1944 Production over 1939				
							Manitoba			Canada	
	Quantity Sold Pounds		Average Price Per Pound \$		Selling Value \$		Quantity	Price Per Lb.	Value	Quantity	Value
	1939	1944	1939	1944	1939	1944					
Fresh Meats											
Beef	91,717,069	182,065,732	0.091	0.189	8,359,449	34,477,574	97	108	310	52	190
Mutton & Lamb	5,671,389	7,634,440	0.141	0.211	798,802	1,605,231	35	50	101	22	82
Pork	22,490,814	39,635,775	0.130	0.190	2,936,395	7,525,253	76	46	156	60	126
Veal	17,098,209	15,602,160	0.109	0.189	1,867,912	2,954,325	79	73	58	0	74
Poultry	3,834,820	4,341,687	0.200	0.317	768,794	1,375,844	13	58	79	124	237
Total	140,812,301	249,279,794	\$0.105	\$0.192	\$14,731,352	\$47,938,227	77	83	226	49	157
Cured Meats											
Salted Beef	6,000	252	0.135	0.178	811	45	96	32	94	130	289
Salted Pork	15,824,847	69,048,908	0.170	0.225	2,684,624	15,494,390	336	32	477	280	431
Hams	4,872,404	12,384,003	0.210	0.251	1,026,269	3,112,998	154	20	203	30	73
Shoulders	1,710,221	12,839,074	0.155	0.210	265,666	2,689,850	650	35	915	83	145
Bacon and Sides	12,224,684	102,749,140	0.193	0.224	2,352,516	23,011,264	741	16	878	246	338
Sausages	8,003,693	19,102,835	0.120	0.176	960,960	3,369,793	139	47	250	88	156
Cooked Meats	1,591,683	3,054,633	0.298	0.374	475,359	1,144,493	90	25	141	77	131
Canned Meats	822,520	40,877,166	0.183	0.226	150,499	10,868,477	4,873	23	7,145	1,224	1,545
Cured Meats N.E.S.	3,688,264	1,656,395	0.163	0.260	601,961	431,642	55	59	28	14	66
Total	48,744,316	261,712,406	\$0.175	\$0.230	\$8,518,665	\$60,122,952	437	31	606	176	264

The increase in prices in 1944 over 1939 has contributed appreciably to the increase in the value of production, being responsible for some 40% of the total increase of the above two groups. It may be noted that five items, fresh beef, fresh pork, salted pork, bacon and sides, and canned meats, which accounted for about 76% of the total value of production of the industry in Manitoba in 1944, were responsible for 80% of the increase in value over 1939.

The table presented below shows the number of animals slaughtered in Manitoba during 1939 and 1944, with dressed weight, factory cost and cost per pound:

	<u>Number</u>	<u>Dressed Weight Pounds</u>	<u>Factory Cost \$</u>	<u>Cost Per Lb. \$</u>
<u>Beef</u>				
1939	206,074	98,214,103	8,594,328	0.088
1944	399,749	199,709,338	34,915,770	0.175
% Increase 1944 over 1939	94	103	306	100
<u>Sheep and Lambs</u>				
1939	136,736	5,992,112	882,997	0.147
1944	168,231	7,155,318	1,453,615	0.203
% Increase 1944 over 1939	23	19	65	38
<u>Hogs</u>				
1939	510,572	80,394,984	9,182,367	0.114
1944	1,993,619	335,509,171	52,417,078	0.156
% Increase 1944 over 1939	291	317	471	37
<u>Calves</u>				
1939	146,067	19,461,402	1,851,179	0.095
1944	123,648	17,970,813	2,904,150	0.162
% Increase 1944 over 1939	-16	-8	6	70
<u>TOTAL</u>				
1939	999,449	204,062,601	20,510,871	0.100
1944	2,685,247	560,344,640	91,690,613	0.164
% Increase 1944 over 1939	168	175	347	56

The estimated domestic consumption of meats in Manitoba in 1939 and 1944, as compared to the production, is shown below. The estimates are based on the Canadian per person consumption figures prepared by the Dominion Bureau of Statistics from the estimates of the number of animals, sold off or killed on farms, the imports and exports and the year-end inventories. The estimated quantity of meats which is shown as shipped outside the province is the difference between production and estimated consumption. Such estimates are somewhat low since they do not take into account the quantities of meat from farm killing in the province and the imports (not readily available).

Meat Consumption and Production

	<u>Consumption per Person in Canada Pounds</u>	<u>Estimated Total Consumption in Manitoba Pounds</u>	<u>Production in Manitoba Pounds</u>	<u>Estimated Quantity Shipped Outside Manitoba Pounds</u>
<u>Beef</u>				
1939	(a) 61.1	(a) 44,603,000	91,723,000	(a) 64,218,000
1944	61.7	45,041,000	182,066,000	137,025,000
<u>Veal</u>				
1939	(b)	(b)	17,098,000	(b)
1944	11.0	8,030,000	15,602,000	7,572,000
<u>Pork Products</u>				
1939	52.0	37,960,000	57,123,000	19,163,000
1944	61.4	44,820,000	236,657,000	191,837,000
<u>Mutton and Lamb</u>				
1939	5.8	4,234,000	5,671,000	1,437,000
1944	4.8	3,504,000	7,634,000	4,130,000
<u>Canned Meats</u>				
1939	1.4	1,016,000	823,000	- 193,000
1944	0.1	73,000	40,877,000	40,804,000
<u>TOTAL</u>				
1939		87,813,000	172,438,000	84,625,000
1944		101,468,000	482,836,000	381,368,000

(a) Including veal.

(b) Included under beef.

The foregoing estimates indicate that total meats shipped out of the province in 1939 were about 50%, and in 1944 about 80% of production. This is in reasonable agreement with information obtained from various officials in the industry.

Products other than fresh, cured and canned meats, as shown previously, accounted for about 12% of the total value of production of the industry in Manitoba in 1939 and 8% in 1944. The corresponding percentages for Canada were 16 and 12 respectively. The increase in production in 1944 of the majority of these products was, of course, in the same order as the increase in meat production. The production of vegetable shortening, which in 1939 was made from imported vegetable oils, was of necessity considerably lower in 1944.

The production in Manitoba of products other than fresh, cured and canned meats in 1939 and 1944 was as follows:

	1939			1944		
	Average			Average		
	Quantity	Unit	Value	Quantity	Unit	Value
	Pounds		\$	Pounds		\$
Sausage Casing	-		203,517			560,867
Mince Meat	48,996		4,549			(a)
Lard	6,165,855	0.077	477,644	24,795,806	0.130	3,218,765
Shortening (no animal fat)	4,430,992		386,165			(a)
Shortening (with animal fat)	2,983,507	0.084	251,054	3,749,410	0.155	582,831
Tallow, edible	1,047,144	0.048	48,275	1,517,898	0.101	153,435
Tallow, inedible	5,297,314	0.037	197,759	7,716,455	0.084	650,883
Oils	-		(a)	2,039,446		251,310
Stock and Poultry Foods	8,799,036	0.024	211,537	8,775,071	0.023	198,909
Cracklings	676,887	0.021	14,384	41,902,211	0.044	1,849,573
Grease	-			1,208,897		85,920
Tankage	7,014,000	0.020	142,009	5,838,000	0.013	74,308
Bone, raw, ground	428,000		3,742	1,476,000		20,601
Cattle hides, Number	189,886	4.750	902,231	333,846	7.050	2,353,953
Sheep Skins, Number	136,112	1.030	140,241	184,433	1.460	269,485
Calf Skins, Number	111,883	2.190	245,233	92,528	3.040	281,840
Hair	117,214	0.043	5,141	1,089,512	0.073	79,379
All Other Products	-		191,349			650,083
Custom Work	-		863			-

(a) Included in "All Other Products".

It has been shown that the slaughtering and meat packing industry in Manitoba is the first ranking manufacturing industry, representing in 1944 about 34% of the total value of the manufacturing production and paying about 12.6% of the total salaries and wages.

In 1944 the total purchases of the industry amounted to about \$99,000,000 compared to \$21,000,000 in 1939. Of the \$99,000,000, live stock accounted for about \$92,000,000; and live stock from Manitoba farms represented some 43% of this. About one-half of the balance of \$7,000,000 was spent on containers, wrappers, cases, etc., of which about 25% to 30% were products of Manitoba industries. Vegetable oil purchases amounted to \$217,000, of which about \$50,000 were for sunflower seed oil. Salt, another Manitoba product, was used to the extent of 15,800 tons.

About 70% of the balance of purchases were dressed and partially cured meats.

The importance of the industry to the economy of the province is clearly illustrated and its future is of vital interest. The main market for the products is the export market, which currently takes some 75 - 80% of the total production. The plant capacities are ample, as has been demonstrated by the large increase in live stock processed in recent years with only a relatively small capital expenditure on sites, buildings and machinery. The domestic market can only absorb a small proportion of the plant capacity. The two essentials to prosperity are, therefore, live stock supply and export markets. During 1945 and the year 1946, exports were curtailed, not for the lack of markets, but due to the decrease in hog production. The marketing of cattle, calves, sheep and lambs increased in 1945. Hog marketing dropped 50% in Western Canada and 30% in Canada as a whole. It is indicated that the decrease in 1946 over 1945 will be

of the same order. The decrease is attributed to shortage of farm help, prices and government policy. It is anticipated that the demands for Canadian meats in Europe will be curtailed. Future export markets are largely dependent upon government policies here and abroad, and on the production of high quality products.

The by-products of the industry are a relatively small percentage of the total production. The production in Manitoba of specialty pharmaceuticals from by-products such as glands has been suggested. The quantities of such by-products, however, are too small to warrant the construction of the highly specialized plant required. The possibilities of glue production, tanning of hides, soap making and vegetable canning are discussed later in this volume. The record of the industry has been one of progressive development and it may be safely assumed that continual consideration is being given to the possibilities of increased utilization of by-products and other allied manufacturing processes.

Butter and Cheese

This industry includes all manufacture of butter, cheese and concentrated milk products. The value of the production includes the value of fluid milk and cream sold, amounting to about 30% of the total value of production of the industry. Over 75% of the factories are creameries and the balance cheese factories.

Among the Canadian provinces, Manitoba took third place in the gross value of production of the industry in 1939 and fourth in 1943, and produced about 8% of the Canadian total in both years. The gross value of production in the three Prairie Provinces was equivalent to some 21.4% of the Canadian total in 1939 and 25.8% in 1943.

In comparison with other manufacturing industries in Manitoba, it ranked third in the gross value of production in both 1939 and 1943, production equalling 7.3% and 6.0% respectively of the total gross value of production of all the manufacturing industries. The Canadian industry as a whole constituted some 3.8% in 1939 and some 2.5% in 1943 of all manufacturing.

The chief statistics of the industry for Manitoba, the Prairie Provinces combined and Canada are shown in the following table for 1939 and 1943:

	No. of Factories	Capital Invested \$	No. of Employees	Salaries & Wages \$	Cost of Materials \$	Gross Value of Production \$
Manitoba						
1939	90	4,501,952	1,289	1,584,359	6,505,644	9,760,277
1943	92	5,137,123	1,480	2,100,586	13,550,346	18,289,093
Prairies						
1939	269	12,094,204	3,175	3,668,583	17,952,741	26,218,609
1943	270	15,603,273	4,325	5,567,651	43,015,754	55,722,185
Canada						
1939	2,528	62,430,427	17,448	16,635,539	87,344,396	122,561,771
1943	2,314	72,237,363	19,181	23,836,366	166,881,687	215,771,404

The increase in value of Manitoba production in 1943, as compared with 1939, was largely due to the increase in the production and in the price of butter; butter poundage increasing about 28% and the price per

pound about 51%.

Factory or Creamery Butter

Manitoba ranks fifth by provinces in the production of creamery butter, with a production per year during 1939-1944 of 10%-11% of the total Canadian production and 32%-26% of the Prairies production. In the first years of the war Ontario lead in creamery production followed by Quebec, Alberta, Saskatchewan and Manitoba. Quebec and Saskatchewan are now in first and third place respectively.

The production of creamery butter is shown for Manitoba and Canada for the years 1939-1945:

	<u>Manitoba</u>			<u>Canada</u>		
	<u>'000 Lbs.</u>	<u>\$ Unit Price</u>	<u>\$'000 Value</u>	<u>'000 Lbs.</u>	<u>\$ Unit Price</u>	<u>\$'000 Value</u>
1939	26,254	.215	5,703	267,613	.261	61,748
1940	27,290	.235	6,413	264,724	.245	64,909
1941	31,106	.323	10,041	285,848	.326	93,200
1942	31,644	.330	10,442	284,591	.343	97,741
1943	33,922	.330	11,194	311,709	.337	105,104
1944	31,553	.330	10,419	298,777	.339	101,536
1945	26,995	.334	9,016	293,541	.344	101,009

Consumption of creamery butter in Manitoba averaged about 14,000,000 lbs. a year from 1939-1945, or about 47% of the production. The balance was exported out of the province, largely to Eastern Canada. It is estimated that upwards of 50% of the creamery butter produced in the three Prairie Provinces is exported out of the Prairies, mostly to Eastern Canada.

It may be noted here that creamery butter now comprises a larger percentage of the total butter production than prior to the war. In 1939 creamery butter accounted for about 70% of the total both in Manitoba and Canada and, during the years 1943 to 1945, about 84%. The corresponding percentages for the Prairie Provinces combined were about 60 and 80 respectively.

Factory Cheese

In the production of factory cheese, Manitoba ranks third by provinces, with a production in 1939 equivalent to about 2.6% of the Canadian production and, in 1944, about 2.3%. Ontario accounts for about 59% of the production and Quebec about 35%. The combined production of the Prairie Provinces represents over 4% of the Canadian total.

The production of factory cheese is shown for Manitoba and Canada:

	Manitoba			Canada		
	'000 Lbs.	\$ Unit Price	\$'000 Value	'000 Lbs.	\$ Unit Price	\$'000 Value
1939	3,493	.117	407	125,475	.122	15,312
1940	4,546	.133	605	145,339	.137	19,911
1941	3,670	.192	706	124,673	.198	24,737
1942	5,127	.210	1,077	207,431	.216	44,941
1943	3,361	.224	753	166,274	.232	38,902
1944	3,940	.227	892	178,223	.233	41,579
1945	3,868	.226	874	186,251	.233	43,466

On the basis of the Canadian per capita consumption of cheese in 1939 and 1944, Manitoba had some 900,000 lbs. of cheese available for export. On the same basis, however, the Prairie Provinces combined produced some 2,000,000 lbs. less than their requirements.

The total exports of cheese from Canada amounted to about 90,945,000 lbs. in 1939 and 131,429,000 in 1944.

Processed Cheese

There are 22 plants producing processed cheese in Canada - 8 each in Quebec and Ontario, 3 in Manitoba and 1 each in Saskatchewan and Alberta.

Figures are not available on Manitoba production, but it is estimated that 20% of the Canadian production is in the Prairie Provinces, which is about in keeping with the population ratio. The production of processed cheese in Canada rose from about 18,321,000 lbs. in 1939 to about 33,991,000 lbs. in 1944, with a value of about \$3,900,000 and \$10,221,000 respectively. The average price in 1939 was 21.2 cents as compared to 30.0 cents in 1944.

Very little processed cheese is exported from Canada.

Ice-Cream

The production of ice-cream in Manitoba nearly doubled between 1939 and 1944, in keeping with the general trend in Canada.

Production and value were as follows:

Year	Gallons	Price per Gallon \$	Total Value \$
1939	657,933	1.17	769,781
1944	1,172,516	1.25	1,465,645

Concentrated Milk Products

The items in this classification are divided into two sections:

1. Concentrated whole milk products
2. Concentrated milk by-products.

Concentrated whole milk products include:

- (a) Condensed whole milk(sweetened), in both bulk and case foods.
- (b) Evaporated whole milk (unsweetened), in both bulk and case foods.
- (c) Whole milk powder by both spray or roller process.
- (d) Cream powder.

Concentrated milk by-products include:

- (a) Condensed skim milk.
- (b) Evaporated skim milk.
- (c) Skim milk powder, both spray or roller process.
- (d) Condensed buttermilk.
- (e) Buttermilk powder.
- (f) Casein.
- (g) Sugar of milk.

With one minor exception, there is no production of the above products in Manitoba. One creamery produces some skim milk powder, the

production in 1944 being about 149,290 lbs. valued at \$17,918.

The industry is centred in Ontario where 19 of the 26 Canadian plants are located. There are three plants in Western Canada, one in Alberta and two in British Columbia.

The value of concentrated milk products and concentrated milk by-products produced in Canada in 1944 was \$22,910,579 and \$4,797,848 respectively.

The Canadian production and exports of condensed and evaporated whole milk and whole and skimmed milk powder for the years 1942-1944 were as follows:

<u>Year</u>	<u>Condensed Whole Milk</u>			
	<u>Production</u>		<u>Exports</u>	
	<u>Lbs.</u>	<u>\$</u>	<u>Lbs.</u>	<u>\$</u>
1942	23,076,495	2,642,014	14,594,800	1,611,813
1943	26,851,330	3,285,009	17,160,100	2,143,541
1944	31,776,955	3,861,904	17,907,800	2,380,127

<u>Evaporated Whole Milk</u>				
1942	185,761,883	14,411,501	49,228,500	4,181,529
1943	178,287,725	14,211,930	26,737,700	2,515,774
1944	180,647,124	13,979,034	27,325,300	2,699,822

<u>Whole Milk Powder</u>				
1942	11,133,731	3,235,707	2,628,400	873,899
1943	15,053,213	4,619,186	1,414,000	468,507
1944	15,031,819	5,067,328	1,083,300	405,681

<u>Skim Milk Powder</u>				
1942	26,670,356	2,693,179	437,900	108,659
1943	22,352,446	2,513,986	409,400	93,755
1944	28,525,350	3,172,211	21,600	2,951

Casein

Casein is largely used for glue manufacture and as a size for coating purposes. Normally, casein produced in Canada has severe competition from casein imported from Argentina. Possibilities of development of casein manufacture in Manitoba do not appear promising.

There are fourteen plants in Canada producing casein, ten being located in Quebec, three in Ontario and one in British Columbia. The plants are located in dairy centres. About 3,330 lbs. of skim milk are required to produce 100 lbs. of casein.

The production in Canada for the years 1939 and 1941-1945 was as follows:

	<u>Lbs.</u>	<u>Value</u> <u>\$</u>
1939	1,715,657	143,660
1941	1,181,620	177,449
1942	4,260,207	668,254
1943	3,112,439	659,313
1944	2,961,531	not obtained
1945	3,793,622	" "

The imports and exports for some selected years were as follows:

	<u>Imports</u>		<u>Exports & Re-Exports</u>	
	<u>Lbs.</u>	<u>Value</u> <u>\$</u>	<u>Lbs.</u>	<u>Value</u> <u>\$</u>
1939	919,254	55,607	2,156	218
1942	843,614	161,415	500	150
1943	275,877	36,182	21,310,393	271,155
1944	480,588	59,131	65,251	8,873

x - In excess of 80% to the United States

The apparent consumption in Canada of casein is shown for the years 1939, 1942, 1943 and 1944:

	<u>Lbs.</u>	<u>Value</u> <u>\$</u>
1939	2,632,755	198,049
1942	5,103,321	829,519
1943	2,077,923	424,340
1944	3,376,868	-

Production of concentrated milk products and by-products is dependent upon large quantities of milk being available in concentrated areas.

From the data at hand it appears doubtful if the quantities of milk available are sufficient to justify the establishment of these industries.

Leather

Tanning

There is one tannery operating in Manitoba. Its production consists of glove, garment and upper shoe leather, with glove and garment leather representing about 80% of the total. The tannery is one of twenty-three in Canada, each with a production in excess of \$500,000 yearly. A substantial portion of the output is shipped to Eastern Canada.

Expansion of the tanning industry in Manitoba appears feasible in view of the raw materials available from the packing house industry.

The chief statistics of the tanning industry in Canada for a specified number of years were as follows: (Those for Manitoba are not available.)

Year	No. of Plants	Number of Employees	Salaries & Wages \$	Gross Value of Production \$
1929	86	3,313	3,934,883	25,807,165
1930	82	3,047	3,521,481	19,936,315
1931	88	3,012	3,306,423	15,778,789
1932	82	3,096	3,180,663	14,188,118
1934	90	3,580	3,483,301	17,909,074
1937	83	4,382	4,576,703	26,269,794
1938	88	3,940	4,175,321	19,661,099
1939	84	4,312	4,688,836	25,584,972
1941	78	4,640	5,737,511	33,943,394
1943	78	4,596	7,157,700	44,733,047
1944	75	4,472	7,585,416	45,011,288

The tanning industry is centred in Ontario, where the value of production in 1944 was \$38,858,739, representing 86% of the total for all plants. Ontario and Quebec combined accounted for about 98% of the Canadian total.

The principal kinds of leather produced in order of value in 1944 were:

Oak tanned sole leather	\$12,774,920
Cattle & horse hide upper leather	9,008,508
Calf skin upper leather	6,049,835
Glove leather	3,396,608

The value of these four items combined accounted for 69% of the total value of the output.

Total imports of all leathers (unmanufactured) into Canada in 1944 amounted to \$2,975,681 and exports, \$2,910,079.

Footwear

There were five plants in Manitoba producing leather footwear in 1939 and 1943. Three manufactured boots and shoes, one, slippers and one, moccasins. In 1939 the production in the province was 0.9% of the Canadian total and 1.1% in 1943. At the present time there are only four plants, as one of the boot and shoe plants is no longer operating in the province.

The principal statistics for Manitoba and Canada were as follows for the years 1939 and 1943: About 95% of the Canadian production was in Ontario and Quebec.

	No. of Firms	Capital Invested \$	Number of Employees	Salaries & Wages \$	Gross Value of Production \$
Manitoba					
1939	5	190,732	130	90,508	370,242
1943	5	248,357	192	182,451	797,393
Canada					
1939	222	30,258,048	16,957	13,467,293	40,925,513
1943	222	Not available	18,665	21,677,798	75,583,954

The following table gives the total Canadian value of production and also the value of production for provinces other than Quebec and Ontario for 1944:

	Canada \$	Provinces Other than Quebec and Ontario \$
Boots, shoes(leather)	70,594,982	3,131,014
Slippers	4,077,095	42,223
Moccasins, Shoepacks		
Etc.	1,715,809	143,556
	<u>76,297,886</u>	<u>3,316,793</u>

The percentage of the 1944 value of production for the various classes of leather boots and shoes for Canada and the provinces other than Quebec and Ontario is also given:

	Canada	Provinces Other than Quebec & Ontario
	<u>%</u>	<u>%</u>
Men's	41	94
Boys', youths'	6	5
Women's & growing girls'	43	1
Misses'	4	
Children's	3	
Babies' and infants'	3	
	<u>100%</u>	<u>100%</u>

The estimated sales of shoes and other footwear in retail merchandising establishments for 1941 are given for Canada, the Prairie Provinces and Manitoba:

	Canada	Prairies	Manitoba
	<u>\$</u>	<u>\$</u>	<u>\$</u>
Boots & shoes, men's & boys'	29,040,400	5,683,700	2,275,900
Boots & shoes, women's & misses'	36,560,200	7,064,100	3,055,000
Boots & shoes, children's & infants'	7,395,100	1,963,800	1,019,100
Rubbers and overshoes	14,862,900	2,732,300	985,700
Other, including slippers	5,481,300	956,300	418,800
	<u>93,339,900</u>	<u>18,400,200</u>	<u>7,754,500</u>

Gloves and Mittens

There were four plants in Manitoba producing leather gloves and mittens in 1940 and seven in 1944. The breakdown of production in Manitoba is not available, but it is estimated that the province produces about double its requirements of work-gloves and about one-half its requirements of dress-gloves. Manitoba's total value of production of leather gloves and mittens was 7.5% of the Canadian total in '40 and 8.1% in 1944. The value of production in 1944 increased about 90% over that of 1940.

The principal statistics for Manitoba and Canada follow.

Ontario and Quebec account for about 90% of the total production.

	No. of Firms	Number of Employees	Salaries & Wages \$	Gross Value of Production \$
Manitoba				
1940	4	134	105,220	402,639
1944	7	197	196,463	759,381
Canada				
1940	53	2,145	1,755,624	5,358,738
1944	67	2,840	2,779,799	9,398,158

Miscellaneous Goods

There were 14 plants in Manitoba producing miscellaneous leather goods in 1939 and 16 in 1943. Included in these products were harness and saddlery, trunks, cases, purses, coats, sporting goods and fancy articles of leather. The value of production in Manitoba in 1939 was 3.6% of the total for Canada and, in 1943, 6.5%.

The statistics for Manitoba and Canada for 1939 and 1943 follow.

Ontario and Quebec account for about 90% of the Canadian output.

	No. of Firms	Number of Employees	Salaries & Wages \$	Gross Value of Production \$
Manitoba				
1939	14	107	77,224	304,508
1943	16	234	243,225	1,231,426
Canada				
1939	214	3,102	2,741,484	8,403,067
1943	244	4,804	5,227,296	18,760,294

The value of the principal products in 1944 for Canada and the provinces other than Quebec and Ontario was as follows. Separate figures are not available for Manitoba, but in excess of 50% of the value of the itemized products listed in the second column resulted from production in Manitoba. It will be noted that handbags, which accounted for about 25% of the total Canadian production, were made exclusively in Ontario and Quebec.

Miscellaneous Leather Goods - Principal Products
1944

	Canada	Provinces Other Than Quebec and Ontario
	\$	\$
Handbags	5,016,664	-
Harness	2,307,577	638,626
Hand Luggage	1,599,611	254,067
Billfolds & Wallets	1,472,413	194,105
Coats & Windbreakers other than Leather	1,415,025	287,195
Leather Coats & Windbreakers	1,231,238	363,399
Trunks	603,546	127,980
Body Belts	554,758	11,556
Cases, (Toilet, etc.)	447,983	4,193
Straps	407,958	2,585
Brief Cases	389,784	41,119
Fancy Articles of Leather	276,607	3,482
	15,723,164	1,928,307
All Other	4,167,186	389,414
Total	19,890,350	2,317,721

Fur Goods

The industry is concentrated chiefly in Quebec and Ontario, although Manitoba is well represented in relation to population.

In 1944 the industry recorded its highest production, being 5% higher than the previous high in 1943.

Some of the principal statistics are given for the year 1944:

	No. of Plants	Number of Employees	Salaries & Wages \$	Gross Value of Production \$
Quebec	215	2,427	3,668,662	19,873,547
Ontario	221	1,791	3,108,903	16,673,268
Manitoba	45	497	677,299	3,172,883
Other Provinces	36	246	293,904	1,190,011
Total	517	4,961	7,748,768	40,909,709

Fur coats comprised the bulk of the products produced in Canada, those for women having a value of \$27,857,262, or 68% of the total of all items. The same condition applied in Manitoba, where the production was \$2,220,830, or 70% of the total.

The gross value of production in Manitoba represented in 1944 about 7.7% of the Canadian total and, in 1939, 9.3%. The value of production in Canada in 1944 increased 124% over that in 1939 and, in Manitoba, 87%.

The following statistics of the industry for Manitoba are given for the years 1939 and 1943:

	No. of Plants	Number of Employees	Salaries & Wages \$	Gross Value of Production \$
1939	40	430	460,077	1,701,984
1943	45	496	603,503	2,870,839

Fur Dressing & Dyeing

The Canadian fur dressing and dyeing industry is established on a custom basis, the customer sending the furs to be treated and being charged for the work performed.

The following statistics are shown for Manitoba for the years 1939 and 1943:

	No. of Plants	Number of Employees	Salaries & Wages \$	Gross Value Received For Processing \$
1939	3	56	55,000	121,853
1943	3	88	105,435	194,468

The total amount received for the treatment of furs by all firms in Canada was \$1,681,660 in 1939 and \$3,075,468 in 1944.

VEGETABLE PRODUCTS INDUSTRIES

Flour and Feed Milling

Flour Mills

Feed and Chopping Mills

Prepared Stock and Poultry Feeds

Bread and Other Bakery Products

Biscuits, Confectionery, Cocoa
and Chocolate

Macaroni and Kindred Products

Breakfast Foods

Malt and Malt Products

Breweries

Aerated Waters

Miscellaneous Foods (including Coffee,
Tea and Spices)

Fruit and Vegetable Preparations

Sugar

Vegetable Oils

Starch and Glucose

Dried Alfalfa Meal

Industrial Ethyl Alcohol

Butyl Alcohol

Butylene Glycol

Straw Utilization

Flour and Feed Milling

The first development of importance in the flour and feed milling industry in Manitoba occurred in 1881 when a large flour mill was erected in Winnipeg. Until 1924 it was the leading manufacturing industry of the province in respect to value of production; in 1925 it lost the premier position to the slaughtering and meat packing industry; it retained second place for two years and then was in third or fourth position in all subsequent years until 1943, when it regained the position of the second leading industry in the province.

Prior to 1943 the peak gross value of production in Manitoba and Canada was achieved in 1928. At that time productive capacity of flour mills in Canada was 121,000 barrels as compared with about 100,000 barrels a year in 1943. A comparison of the gross value of production of the milling industry is shown for Manitoba and Canada for various years. The production includes output of flour mills and of feed or chopping mills. In Manitoba 95% of the production is from flour mills, as against 80% for Canada as a whole.

	Manitoba	Percentage Of Canada	Canada
	\$		\$
1928	18,788,855	9.6	195,698,124
1929	17,126,466	9.5	181,148,689
1933	648,525	7.6	83,322,099
1935	7,426,855	7.6	97,567,868
1936	9,002,161	7.8	114,617,099
1937	11,054,577	8.3	133,634,179
1938	9,287,085	7.5	122,598,168
1939	6,126,143	6.0	101,776,429
1940	8,171,001	6.7	122,494,759
1941	9,749,916	6.7	144,171,637
1942	12,196,067	8.3	159,463,671
1943	18,880,796	9.4	201,127,291
1944	22,020,225	10.2	215,790,282

1. Flour Mills

Manitoba ranks fifth by provinces in the value of flour production, being exceeded by Ontario, Saskatchewan, Quebec and Alberta.

In the period from 1939 to 1943 the value of production increased some 190% as compared with 95% for Canada as a whole.

The number of mills, capital invested and other statistics for Manitoba, the Prairie Provinces combined and Canada for the years 1939 and 1943 follow:

	No. of Mills	Capital Invested \$	Number of Employees	Salaries & Wages \$	Cost of Materials \$	Gross Value of Production \$
Manitoba						
1939	30	3,967,733	464	470,823	4,510,858	5,998,676
1943	26	7,562,648	622	825,478	14,594,434	17,457,704
Prairies						
1939	122	17,390,640	1,700	2,025,671	20,185,446	29,849,192
1943	106	24,716,780	2,064	2,936,216	47,055,271	58,143,669
Canada						
1939	303	41,167,975	4,540	5,621,370	59,164,699	81,745,050
1943	260	60,976,429	5,347	8,450,020	133,888,281	159,148,228

Wheat Flour

(a) Production

Flour from wheat is the main product of the milling industry and constituted some 72% of the production value in 1939 and 68% in 1943. The corresponding percentages for Canada were 66 and 71.

Due to world shortages, the flour mills in Canada have been operating at or near capacity for several years. The quantity and value of wheat flour produced in 1939 and 1943 in Manitoba and Canada follow :

	Manitoba		Canada	
	<u>Barrels</u>	<u>\$</u>	<u>Barrels</u>	<u>\$</u>
1939	1,214,958 ^x	4,299,608	15,751,654	54,322,321
1943	2,693,228	11,931,235	23,986,769	112,354,014

x - Barrel = 196 Lbs.

The estimated maximum capacity for flour production in Canada in 1943 was 99,636 barrels per day, and a partial breakdown of this capacity is shown in the following table:

	<u>Number of Mills</u>	<u>Capacity per Day (Bbls)</u>	<u>Percentage of Total</u>
Ontario	90	50,950	51.1
Saskatchewan	42	13,419	13.5
Quebec	52	12,469	12.5
Alberta & B. C.	40	11,529	11.6
Manitoba	26	10,675	10.7
Others	<u>10</u>	<u>594</u>	<u>0.6</u>
Canada	<u>260</u>	<u>99,636</u>	<u>100.0</u>

About 10% of the mills in Canada have about 80% of the total capacity and this proportion also applies to Manitoba. Based on a 270 day year, Manitoba's potential production capacity is 2,882,250 barrels a year as compared to 26,901,720 for Canada.

(b) Domestic Consumption of Flour

The domestic consumption of wheat flour in Canada, per person, averages about one barrel per year. The consumption varies with recent years being somewhat below average.

The entire domestic consumption in the Dominion can be supplied from the current installed Canadian capacity in about 120 days. The Manitoba capacity can supply the domestic requirements of the province in about 70 days of operation. The industry is consequently dependent upon exports.

(c) Exports of Flour

The Canadian production, exports and average value per barrel at mill for the period 1937-1944 follow:

	<u>Canadian Production (Bbls)</u>	<u>Exports Bbls</u>	<u>Average Value per Bbl. \$</u>
1937	14,208,560	4,087,011	5.67
1938	13,353,520	3,911,886	5.65
1939	15,751,654	5,342,172	3.45
1940	17,419,229	6,970,902	3.84
1941	20,869,321	11,439,191	3.80
1942	20,119,782	10,638,143	4.28
1943	23,986,769	12,896,995	4.68
1944	24,470,610	not obtained	not obtained

It will be seen that the percentage of exports to production varied from less than 30% to an excess of 50%. Based on estimates obtained from the industry, between 60% and 70% of Manitoba's production is exported.

(d) Competition - Export

Officials of the milling industry express the opinion that production for export has reached its peak for the following reasons: New modern mills can be expected to replace those destroyed in Britain and in the war sectors of Europe. Importation of wheat by Britain and European countries will replace importation of the finished flour due, in part, to the demand for the by-products for feedstuffs. Competition from other flour exporting countries of the world can also be anticipated.

(e) Competition - Domestic

With capacity well above consumption, the domestic market is highly competitive. Competition in the past has been severe. In the year 1923 there were 560 flour mills in Canada and in 1943 there were 264 - almost a 50% reduction. In Manitoba the decline was from 36 to 26.

In the report of the milling industry for 1937, the Dominion Bureau of Statistics ventured the following statement:

"A review of the flour and feed milling industries during 1937 reveals the fact that, notwithstanding a decrease of 32 in the number of mills reporting, there was a marked increase in all of the other items comprising the principal statistics, with the exception of capital invested, which shows a decrease.

"The decrease in the number of establishments is largely due to more extensive distribution services now in force by some of the larger milling companies covering the more sparsely populated areas. This has superseded to a great extent the former system of obtaining flour and other cereal products from the local mills, some of which have consequently discontinued operations."

Other Products of Flour Milling

The value of production of products other than wheat flour is shown for 1939 and 1943 for Manitoba. That the industry endeavours to cater to demands for allied products is evident:

	1939	1943
	<u>\$</u>	<u>\$</u>
Whole wheat and graham flour	24,987	35,626
Prepared flour, barley flour & meal	-	143,885
Rye flour and meal	740	8,101
Oatmeal	60,305	51,721
Rolled oats	514,174	605,477
Rolled wheat	4,678	11,071
Unprepared breakfast foods	46,037	24,415
Barley, (pot and pearl)	18,882	47,237
Stock and poultry foods	151,911	780,000
Shorts and middlings	378,453	1,298,750
Bran	282,152	878,950
Chopped grain and feed	148,734	1,040,444
Offal N.O.S.	67,820	135,526
All other products	<u>195</u>	<u>445,266</u>
	<u>1,699,068</u>	<u>5,506,469</u>

As previously indicated, these products in Manitoba represented about 28% in 1939 and 32% in 1943 of the total production of the flour mills. The corresponding percentages in Canada were 34 and 29. In Manitoba, shorts, middlings, bran and chopped grain feed accounted for 14% and 18% respectively of the total. A substantial quantity of this feed is shipped to Ontario. Rolled oats accounted for 9% and 3-1/2% respectively, of which about 66% is exported. Stock and poultry foods are dealt with in more detail later under that industry. At the present time the mills appear to be disposing of all their residues at a profit, mainly for export to the United States. Waste seeds are selling at about \$22.00 per ton, wild oats about 50¢ a bushel and chaff about \$26.00 per ton. The future market for these residues is somewhat uncertain.

2. Feed & Chopping Mills

In 1939 the production of feed and chopping mills in Manitoba was insignificant. However, due primarily to the increase in live stock and more intensive feeding methods, 1943 production had increased about twelve-fold. As the demand for these products largely reflects the demand for live stock, especially hogs, this portion of the industry also is, therefore, largely dependent upon the export demand for live stock products. Manitoba's production in 1943 accounted for about 3.4% of the total for Canada.

The number of mills, capital invested, number of employees and gross value of production are shown for Manitoba and Canada for the years 1939, 1942 and 1943:

	No. of Mills	Capital Invested \$	Number of Employees	Gross Value of Production \$
Manitoba:				
1939	8	79,698	17	127,467
1942	14	118,804	30	289,513
1943	18	161,700	59	1,423,087
Canada:				
1939	747	6,758,343	1,358	20,031,379
1942	894	9,160,083	1,731	33,875,151
1943	871	9,978,917	1,826	42,033,149

Prepared Stock and Poultry Feeds

The industry manufacturing stock and poultry feeds has shown remarkable expansion in production both in Manitoba and in Canada as a whole.

The principal statistics of the industry for Manitoba and Canada follow for 1939 and 1943:

	No. of Plants	Capital Invested \$	Number of Employees	Salaries & Wages \$	Gross Value of Production \$
Manitoba:					
1939	5	282,444	37	45,110	306,860
1943	6	542,398	95	140,054	1,703,224
Canada:					
1939	121	8,282,383	1,311	1,572,489	12,665,243
1943	138	15,522,877	2,231	3,334,728	40,594,703

In addition, prepared feeds are manufactured by the flour milling industry but are not included in the foregoing figures. The following table shows the gross value of the different types of products from all sources for all of Canada for the years 1939 and 1943, and is followed by a table showing the total production and value for Canada and the Prairie Provinces combined for 1944. Poultry feeds and concentrates represent about 50% of the total production.

**Gross Value of Canadian Production
of
Prepared Stock and Poultry Feeds**

	1939 <u>\$</u>	1943 <u>\$</u>
<u>Stock and Poultry Foods</u>		
Calf meals	241,928	1,005,562
Dairy & cattle feeds	2,060,055	5,500,442
Dairy & cattle concentrates	151,137	969,789
Horse foods	395,162	415,708
Sheep feeds	5,398	58,671
Swine feeds	1,436,344	7,082,187
Swine concentrates	516,565	2,677,424
Poultry feeds	8,379,352	28,476,900
Poultry concentrates	758,609	3,409,297
Other mixed feeds	417,274	584,767
Other mixed concentrates	6,345	77,824
Mineral mixtures	364,866	417,276
Sub-Total	<u>14,733,035</u>	<u>44,313,485</u>
<u>Other Animal Feeds</u>		
Fox biscuits	211,733	196,132
Dog biscuits	83,482	297,692
Other fox food	589,409	548,697
Other dog food (including canned)	534,510	439,522
Mink food		107,408
Rabbit food	6,730	38,659
Goat & other animal Feeds	174,858	22,980
Sub-Total	<u>1,600,722</u>	<u>1,651,290</u>
<u>Other Products</u>		
Stock & Poultry tonics	267,367	510,806
Veterinary medicine	<u>120,176</u>	<u>203,157</u>
Grand Total	<u>16,721,300</u>	<u>46,678,738</u>

Production
of
Prepared Stock and Poultry Feeds
1944

	Canada		Prairie Provinces	
	Tons	\$	Tons	\$
<u>Prepared Stock Feeds</u>	506,795	22,825,262	48,133	2,057,419
Calf meals	18,060	1,146,707	3,180	182,990
Dairy & cattle feeds	199,436	8,385,437	7,706	264,677
Dairy & cattle concentrates	23,262	1,171,567	1,433	79,728
Horse feeds	12,210	462,429	6,469	214,244
Sheep feeds	3,045	86,737	3,025	88,000
Swine Feeds	207,282	9,006,939	12,528	457,097
Swine concentrates	43,500	2,565,446	13,792	770,683
<u>Poultry Feeds</u>	577,225	29,242,775	34,454	1,720,093
Chick starter	68,727	4,088,150	13,075	746,084
Growing mash	112,742	5,521,236	5,592	256,195
Laying & hatching mash	278,257	14,240,292	10,149	469,057
Other mash	32,623	1,716,954	2,459	119,300
Scratch feed	84,876	3,676,143	3,179	129,457
Poultry concentrates	52,433	3,878,796	14,084	952,348
Other mixed feeds	16,705	803,379	1,056	53,658
Other mixed concentrates	3,595	193,992	3,077	132,702
Mineral mixtures	3,605	273,709	578	30,237
Total	1,160,358	57,217,913	101,382	4,946,457
<u>Other Animal Feeds</u>				
Fox biscuits	1,503	156,417	184	15,660
Dog biscuits	1,104	170,940	29	3,820
Other fox foods	7,889	717,688	908	83,361
Other dog foods	3,063	550,382	339	30,589
Mink foods	1,125	101,480	646	58,036
Rabbit foods	1,196	83,215	5	400
Goat foods	85	3,724		
Other animal foods	207	11,074		
Total	16,172	1,774,920	2,111	191,766
<u>Other Products</u>				
Canned dog food	x	x		
Stock & poultry tonics		543,638		7,200
Veterinary medicines		228,843		425

x - Included under "Other dog foods"

It will be noted that the production of prepared poultry and stock feeds in the Prairie Provinces is less than 10% of the total Canadian production, whereas the numbers of poultry and live stock in the Prairies are in each case about 50% of the Canadian total. This can be largely accounted for by the fact that, in Western Canada, the poultry and dairy

industries are largely integrated with grain farming, whereas, in Eastern Canada, they are more dependent upon outside sources of feeding stuffs.

Bread and Other Bakery Products

The value of production of bread and other bakery products in Manitoba was equivalent to 4.8% of that of the Canadian total in 1939 and 4.5% in 1943. The industry ranked seventh in Manitoba's manufacturing industries in 1939 and eleventh in 1943. The gross value represented 2.7% and 1.7% of the total value of the manufacturing industries of the province in 1939 and 1943 respectively.

The gross value of production for Manitoba, the Prairie Provinces and Canada is shown for 1939 and 1943.

	Manitoba \$	Prairie Provinces \$	Canada \$
1939	3,663,771	9,310,882	76,040,651
1943	5,468,541	15,399,373	120,445,625

The number of establishments, the capital invested, etc., are set out below for Manitoba, the Prairie Provinces and Canada for the years 1939 and 1943.

	Number of Establishments	Capital Invested \$	Number of Employees	Salaries and Wages \$	Cost of Materials \$
Manitoba					
1939	140	2,082,433	1,159	1,147,309	1,621,107
1943	131	2,944,125	1,283	1,551,525	2,461,775
Prairie Provinces					
1939	425	6,143,418	2,647	2,627,769	4,180,971
1943	363	7,607,294	3,175	3,815,682	7,238,000
Canada					
1939	3,115	49,162,475	23,121	22,337,808	34,391,725
1943	2,996	57,067,417	26,829	32,891,060	56,951,269

The tendency towards larger units in the industry is illustrated by the fact that in 1939 there were 6 establishments with production value of over \$100,000 and 117 with a production value of under \$25,000 whereas, by 1943, the corresponding figures were 9 and 101.

Breakdown by type of production in Manitoba for the years 1939 and 1943 follows:

	<u>Bread</u>		<u>Buns</u>	<u>Pies, Cakes</u>	<u>Other</u>	<u>Total</u>
	<u>Pounds</u>	<u>Value</u>	<u>Value</u>	<u>and Pastry</u>	<u>Products</u>	<u>Value</u>
		<u>\$</u>	<u>\$</u>	<u>Value</u>	<u>Value</u>	<u>\$</u>
				<u>\$</u>	<u>\$</u>	
1939	53,761,382	2,699,000	178,128	780,138	6,505	3,663,771
1943	62,408,268	3,477,063	324,743	1,611,060	55,675	5,468,541

The per capita consumption of bread (exclusive of home-made bread) in Manitoba amounted to about 74 lbs. in 1939 and 86.0 lbs. in 1943. In the Prairie Provinces the corresponding amounts were 54 lbs. and 84 lbs. respectively, indicative of a sharp increase in the consumption of bakery bread in preference to home-made bread.

The Canadian bakery bread production in 1939 was 992,007,885 lbs. and, in 1943, 1,234,420,185 lbs., representing a per capita consumption of about 88 lbs. and 105 lbs. respectively.

Biscuits, Confectionery, Cocoa and Chocolate

The value of production of the above products in Manitoba accounted for 4.6% of the Canadian total in 1939 and 7.1% in 1943. The industry ranked 12th in 1939 in the gross value of production of the manufacturing industries of the province and 10th in 1943.

The gross value of production for Manitoba, the Prairie Provinces and Canada is shown for 1939 and 1943:

	<u>Manitoba</u>	<u>Prairie Provinces</u>	<u>Canada</u>
	<u>Value</u>	<u>Value</u>	<u>Value</u>
	<u>\$</u>	<u>\$</u>	<u>\$</u>
1939	2,343,827	3,002,688	51,301,152
1943	5,682,890	6,744,654	80,261,546

The production of the Prairie Provinces in 1939 was only 5.85% of the Canadian production and 8.4% in 1943.

Other principal statistics are shown in the following table for the years 1939 and 1943.

	<u>Number of Establishments</u>	<u>Capital Invested \$</u>	<u>Number of Employees</u>	<u>Salaries and Wages \$</u>	<u>Cost of Materials \$</u>
Manitoba					
1939	18	1,632,511	550	479,971	999,472
1943	14	1,988,695	771	902,144	2,209,768
Prairie Provinces					
1939	29	1,948,048	697	631,788	1,278,732
1943	23	2,395,659	947	1,126,185	2,692,184
Canada					
1939	216	37,858,363	12,152	11,748,656	22,846,696
1943	211	45,319,223	13,469	16,038,887	39,346,522

The quantity and value of individual types of products produced are not readily available for Manitoba, but the majority of items manufactured by the industry in Canada is well represented. Chewing gum is a notable exception. It will be noted that the greater part of the production of the Prairie Provinces is centred in Manitoba.

The consumption of biscuits and confectionery in Canada in 1939 was about 110,000,000 lbs. and 146,000,000 lbs. respectively. The production of biscuits and confectionery in Canada, the imports and the apparent consumption for 1939 are shown in the following table. The production is that produced by industries classified as above.

	<u>Biscuits</u>		<u>Confectionery</u>	
	<u>Pounds</u>	<u>Value \$</u>	<u>Pounds</u>	<u>Value \$</u>
Production	110,966,000	14,173,887	143,423,946	26,551,077
Imports	1,784,902	379,968	3,638,011	499,704
Total	112,750,902	\$14,553,885	147,061,957	\$27,050,781
Exports	2,846,800	227,997	981,749	205,266
Apparent Consumption	109,904,102	\$14,325,858	146,080,208	\$26,845,515
Per capita consumption	9.7	\$1.26	12.9	\$2.38

Macaroni and Kindred Products

The macaroni industry of Manitoba tripled its production during the period 1939-1943. The products of this industry, macaroni, vermicelli, spaghetti and noodles evidently find a ready market outside the province, as production was some 50% in excess of the estimated local consumption in 1939 and 150% in 1943.

Figures for the principal statistics for Canada and Manitoba for the years 1939 and 1943 are given below:

	No. of Plants	Capital Invested \$	Number of Employees	Salaries & Wages \$	Gross Value of Production \$
Manitoba					
1939	3	281,548	28	23,156	151,606
1943	4	463,492	72	77,440	471,214
Canada					
1939	16	2,113,197	398	348,287	2,008,021
1943	16	2,955,709	585	651,904	3,165,717

The value of Manitoba production represented 7.5% of the Canadian total in 1939 and 14.9% in 1943.

Breakfast Foods

Statistics in this industry refer to firms whose principal products are prepared and unprepared breakfast foods. The unprepared breakfast foods such as oatmeals and rolled oats, which are chiefly produced in the flour milling industry, are not covered in the breakfast foods industry.

Manitoba produces a relatively small percentage of the Canadian production, some 2.0% in 1939 and 4.3% in 1943. Ontario accounted for about 96% of the total.

The principal statistics for Manitoba and Canada are shown for the years 1939 and 1943.

	<u>Number of Firms</u>	<u>Capital Invested \$</u>	<u>Number of Employees</u>	<u>Salaries and Wages \$</u>	<u>Cost of Materials \$</u>	<u>Gross Value of Production \$</u>
Manitoba						
1939	3	226,089	25	21,487	71,059	226,241
1943	6	294,116	31	39,705	205,999	610,161
Canada						
1939	36	4,786,352	794	923,837	2,910,687	9,209,578
1943	34	7,145,901	1,018	1,583,441	6,350,264	14,072,167

The breakdown of this production for Canada was as follows:

	<u>1939</u>		<u>1943</u>	
	<u>Pounds</u>	<u>Selling Value at Factory \$</u>	<u>Pounds</u>	<u>Selling Value at Factory \$</u>
Prepared breakfast foods; corn, bran and wheat flakes, puffed grains, etc.	61,130,258	8,190,407	84,772,909	11,656,606
Unprepared break- fast foods	5,703,774	524,139	11,247,330	881,902
Prepared flours	Included in other products		7,430,894	632,846
Stock and poultry foods	7,889 tons	185,410	Included in other products	
Other products and by-products		<u>309,622</u>		<u>900,813</u>
		<u>\$9,209,578</u>		<u>\$14,072,167</u>

The total production of prepared and unprepared breakfast foods in Canada, the imports and exports, are shown for 1939 and 1943:

	<u>1939</u>		<u>1943</u>	
	<u>Pounds</u>	<u>Value \$</u>	<u>Pounds</u>	<u>Value \$</u>
Production				
Prepared breakfast foods	68,564,149	9,278,466	85,929,470	11,780,119
Unprepared breakfast foods	18,706,529	1,010,344	38,374,128	1,757,556
Imports				
Prepared and unprepared breakfast foods		105,789		7,178
Exports				
Prepared and unprepared breakfast foods		2,892,153		699,167

The prepared breakfast foods made in Manitoba are puffed wheat, corn and rice. In addition to the unprepared foods manufactured by the flour milling industry, "Cream of Wheat" is produced.

Malt and Malt Products

The production of malt in Canada increased from \$5,155,211 to \$10,071,020 in 1943.

The following table gives the principal statistics for Canada and Manitoba for the years 1939 and 1943.

	<u>Number of Plants</u>	<u>Capital Invested \$</u>	<u>Number of Employees</u>	<u>Salaries and Wages \$</u>	<u>Cost of Materials \$</u>	<u>Gross Value of Production \$</u>
Manitoba						
1939	3	2,742,551	122	245,031	1,692,441	2,198,932
1943	3	4,130,602	146	315,432	2,072,377	3,272,540
Canada						
1939	11	6,470,589	339	601,807	3,422,142	5,971,783
1943	11	10,017,685	416	786,493	7,062,891	11,290,485

It will be seen that Manitoba produced 36% of the Canadian total in 1939 and slightly over 30% in 1943. Production facilities have been substantially increased recently, at a cost of \$1,000,000.

Malt is also produced in Alberta but there is no production in Saskatchewan.

In 1943 the brewing industry in Canada used \$6,663,058 and distilleries, \$1,163,096 of Canadian barley malt. Exports from Canada in 1939 were valued at \$1,902,538, in 1944, \$1,147,607 and in 1945, \$1,297,630.

The production of the brewing industry in the Prairie Provinces is 20% of the total for Canada and as there are no distilleries it is apparent that the facilities for production of malt are more than ample to meet all the requirements in this area, so that a substantial part of the production finds markets outside the Prairie Provinces.

Breweries

The gross value of production of the breweries in Manitoba during the period 1939 - 1944 was about 6% of the Canadian total. The industry ranked 11th among Manitoba's manufacturing industries in 1939 and 14th in 1943.

The gross value of production less selling tax is shown for the years 1939 to 1944 for Manitoba and Canada

	Manitoba	Canada
	Value	Value
	\$	\$
1939	2,709,508	43,633,342
1940	3,076,633	50,611,918
1941	3,490,279	63,285,393
1942	4,124,412	74,024,601
1943	4,050,783	69,658,808
1944	5,295,098	82,491,793

The Prairie production less tax for 1939 was \$7,361,690 and for 1943, \$11,677,653 being about 17% of the Canadian production.

The production by total gallons of beer, ale, stout and porter is shown for 1940 and 1943 for Manitoba and Canada.

	<u>Manitoba</u>	<u>Canada</u>
	<u>Gallons</u>	<u>Gallons</u>
1940	3,456,589	72,387,663
1943	4,144,968	95,691,158

The following table shows the number of plants, capital invested, etc., in Manitoba, the Prairie Provinces and Canada for the years 1939 and 1943.

	<u>Number of Plants</u>	<u>Capital Invested \$</u>	<u>Number of Employees</u>	<u>Salaries and Wages \$</u>	<u>Cost of Materials \$</u>
Manitoba					
1939	6	2,479,674	404	636,518	818,663
1943	6	3,380,679	427	735,620 (a)	714,118
Prairie Provinces					
1939	16	9,429,815	831	1,323,818	2,529,642
1943	16	10,126,213	960	1,754,782 (a)	2,222,852
Canada					
1939	61	61,645,877	5,345	8,451,402	16,488,207
1943	61	71,607,123	6,613	12,852,096 (a)	15,918,326

(a) Taxes on malt and hops deducted from cost at factory - included in 1939 costs.

Some 70% of its raw material costs are for malt produced in Manitoba.

The brewing industry is well established in Manitoba and relatively prosperous.

Aerated Waters

This industry manufacturing carbonated beverages is well represented in the province. In line with the general trend of the industry in Canada, in recent years it has substantially increased its output.

The Canadian increase in production from 1939 to 1944 was 64%, that of Manitoba 53% and the Prairie Provinces 58%.

In 1939 Manitoba had 7.5% of the Canadian production, and this was slightly less than 7% in 1944. The Prairie Provinces' percentages of production were 14% in 1939 and 13% in 1944.

On a per capita basis, Manitoba production exceeds the general Dominion average.

The output under present economic conditions could easily have been increased but for the shortage of sugar. Any reduction of purchasing power, however, is quickly reflected in this industry.

For record purposes, the following statistics are given:

	<u>No. of Plants</u>	<u>Number of Employees</u>	<u>Salaries & Wages</u> \$	<u>Cost of Materials</u> \$	<u>Gross Value of Production</u> \$
Manitoba					
1939	25	330	414,375	624,645	2,164,895
1944	20	362	566,819	1,123,824	3,305,917
Canada					
1939	447	4,915	5,528,200	8,751,757	28,743,811
1944	445	5,799	8,976,246	16,667,880	47,193,713

Miscellaneous Foods(Including Coffee, Tea & Spices)

The gross value of production of these industries in Manitoba, the Prairie Provinces and Canada is shown for the years 1939 and 1943:

	<u>Manitoba</u> \$	<u>Prairie Provinces</u> \$	<u>Canada</u> \$
1939	3,588,481	4,122,573	48,739,382
1943	7,430,755	11,340,496	72,798,428

In 1939 Manitoba production was some 7% of the Canadian total, whereas, by 1943, it had risen to 10%. This was largely due to the war-time demand for egg powder for overseas shipment. The industry ranked eighth in the manufacturing industries of Manitoba in 1939 and seventh in 1943. The gross value represented about 2.7% of the total value of the manufacturing industries in 1939 and 3.3% in 1943.

The number of establishments, capital invested, etc., are set out below for Manitoba, the Prairie Provinces and Canada for the years 1939 and 1943:

	<u>No. of Plants</u>	<u>Capital Invested \$</u>	<u>Number of Employees</u>	<u>Salaries & Wages \$</u>	<u>Cost of Materials \$</u>
Manitoba					
1939	18	2,925,413	274	341,431	2,702,021
1943	20	2,787,705	478	515,996	5,965,378
Prairie Provinces					
1939	32	3,241,898	355	418,271	3,084,513
1943	38	3,401,928	716	783,535	9,131,843
Canada					
1939	225	30,391,438	4,410	5,466,419	31,256,377
1943	259	38,991,544	5,792	7,744,697	50,194,167

Coffee, teas and spices constitute a large proportion of the gross value. In 1939 the gross value of teas, coffee and spices in Manitoba was \$3,037,840, or 84.7% of the total of the miscellaneous foods industry. The corresponding percentage for Canada was 60.8.

The breakdown of the gross value of production for 1939 into two groups - coffee, tea and spices and other miscellaneous foods - and the corresponding percentage of the Canadian production value are shown for Manitoba and the Prairie Provinces:

	<u>Coffee, Teas And Spices \$</u>	<u>Percentage of Canadian Production</u>	<u>Other Miscel- laneous Foods \$</u>	<u>Percentage of Canadian Production</u>
Manitoba	3,037,840	10.2	550,641	2.9
Prairie Provinces	3,456,567	11.7	666,006	3.5
Canada	29,684,410	-	19,054,972	-

The principal products under "Other Miscellaneous Foods" are baking powder, prepared cocoanut, confectionery, frozen eggs, egg powder, flavouring extracts, food drinks, specialty foods, jelly and custard powders, cake and pastry mixtures, peanut butter, salad dressings, syrups, yeasts, etc.

All of these foods, with the exception of some specialties such as infant and invalid foods, are prepared in Manitoba. It is the opinion of the industry that production will be well maintained or expanded, with the exception of powdered egg production, the overseas market for which is dwindling.

The breakdown of production in Manitoba is not yet available for 1943, but the Canadian production of some of the chief products is shown for 1939 and 1943. The great increase in egg powder was due chiefly to the production in the Prairie Provinces.

	1 9 3 9		1 9 4 3	
	<u>Lbs.</u>	<u>£</u>	<u>Lbs.</u>	<u>£</u>
Tea,blended & packed	35,754,830	18,155,604	24,903,500	16,786,509
Coffee,roasted	38,302,460	10,950,362	41,143,412	14,516,056
Yeast,fresh & dried	14,057,974	2,710,693	17,798,833	3,622,746
Baking Powder	9,975,533	1,632,838	11,040,154	1,828,179
Jelly Powders	7,720,907	1,534,330	5,163,602	1,468,026
Flavours,Extracts				
Concentrates (Gals.)	289,910	1,811,242	515,239 Gals.	3,506,587
Peanut Butter	9,671,352	1,075,157	4,628,818	773,664
Peanuts,roasted	6,152,404	670,582	4,288,831	1,279,300
Egg Powder	200,821	128,149	7,529,306	8,555,244
Eggs, frozen	2,486,792	360,083	3,808,947	961,146
Pudding Powders	1,740,114	393,843	7,358,617	1,777,488
Custard Powders	349,575	66,743	1,125,182	235,992
Spices,mixed & ground	4,927,222	966,545	5,041,164	1,538,093

Fruit and Vegetable Preparations

This industry covers those firms engaged in canning, evaporating and preserving fruits and vegetables, and the manufacture of vinegar, cider, pickles, catsups, etc.

Canned fruits are not produced commercially in Manitoba. The industry is represented by one established vegetable cannery which has also dehydrated vegetables. There are two pickle and vinegar manufacturers and one firm making marmalade.

No figures are available on production in Manitoba. However, the value of the production in the Prairie Provinces amounted to \$1,902,212 in 1940 and \$2,926,691 in 1944, representing 2.5% and 2.7% respectively of the Canadian production. In 1944 Alberta production totalled \$1,683,657, or 1.6%, so that the production for both Manitoba and Saskatchewan was slightly over 1% in that year.

The most important branch of this industry is the canning of fruits and vegetables, which is carried on most extensively in Ontario, British Columbia and Quebec., where climatic conditions for the growing of fruits and vegetables are favourable.

The total production in Canada in 1944 amounted to \$107,335,254 as follows:

Canned Fruits	6.1%
Canned Vegetables	25.1%
Jams, Jellies & Marmalades	12.0%
Canned Soups, all kinds	13.8%
Pickles and Relishes	4.3%
Catsups and Sauces	3.6%
Total	<u>64.9%</u>

Some of the other items in the group include tomato juice, vinegar, prepared foods for infants, apple juice and evaporated apples, which amounted to 16% of the total. Dehydrated vegetables, worth \$5,959,520, were produced, equal to 5.5%. The balance consisted of a miscellaneous assortment of prepared food products.

The per capita consumption of canned vegetables in Canada is given below:

	Net Weight in Pounds Canned		
	1935-39 <u>Average</u>	1944 <u> </u>	1945 <u> </u>
Leafy, green & yellow	6.4	11.9	11.0
Others	<u>4.4</u>	<u>5.4</u>	<u>4.4</u>
Total	<u>10.8</u>	<u>17.3</u>	<u>15.4</u>

The consumption in Manitoba, if it approximates the Canadian average, would be 7,884,000 lbs., with an estimated value of \$657,000, or considerably more than the value of these goods produced in the province.

Peas and tomatoes combined were 50% of the total production in 1944. Corn and beans accounted for about 40% in the same year.

A further expansion of the vegetable canning industry in Manitoba appears feasible.

Quick-Frozen Vegetables and Fruits

The number of quick freezing locker plants has very rapidly increased in Manitoba in recent years, but there has been little if any commercial production of quick-frozen vegetables and fruits. In view of the growing popularity of these products, commercial production appears feasible. The process is well suited as an adjunct to a canning operation or to a large cold storage plant.

Sugar

A modern beet sugar refinery was completed in 1940 in Manitoba. The maximum capacity of the plant is about 4,000 cwt. of sugar per day. It has a capacity for processing 150,000 tons of beets per 90 day season.

The production of sugar and by-products since the plant started operation is as follows:

	Sugar Cwt.	Molasses & Dried Beet Pulp -Tons
1940	221,000	8,850
1941	230,212	9,723
1942	263,608	15,497
1943	273,420	13,103
1944	211,000	8,384
1945	183,300	8,600

The net import of sugar (beet and cane) into the province was 12,234 tons in 1944 and 12,786 tons in 1943.

During the period 1940-1944 Manitoba produced about 13% of the Canadian beet sugar output.

In 1943 there were three refineries in Canada producing beet sugar exclusively, one in Manitoba and two in Alberta. There was also one refinery in Ontario producing both beet and cane sugar. In 1944 a new beet sugar plant started operations in Quebec. Another large sugar beet plant is planned for Alberta to start operations in 1948.

The peak in beet sugar production in Canada was attained in 1941, when production reached 215,879,271 lbs. valued at \$11,639,825.

The production of refined beet sugar, the price per cwt. and the total value at the refinery are shown for the years 1939 to 1944:

	Sugar Lbs.	Price Cwt.\$	Value \$
1939	169,320,343	4.76	8,063,332
1940	213,602,511	5.08	10,853,665
1941	215,879,271	5.39	11,639,825
1942	189,066,870	6.00	11,349,746
1943	129,268,010	6.75	8,728,995
1944	165,318,840	6.82	11,281,052

The lowest recorded price for beet sugar was \$3.85 per cwt. in 1935.

The number of acres of sugar beets harvested, the yield per acre and total quantity are shown for Canada and Manitoba for the years 1940-1944:

	M a n i t o b a			C a n a d a		
	Acres Harvested	Yield per Acre-Tons	Total Yield Tons	Acres Harvested	Yield Acre-Tons	Total Yield Tons
1940	15,700	6.07	95,120	77,548	10.64	825,344
1941	10,700	8.64	92,500	63,925	11.08	708,616
1942	14,130	9.10	128,653	62,381	11.25	701,884
1943	14,129	7.73	109,128	52,693	9.00	474,378
1944	9,520	8.50	80,884	55,020	10.27	564,927

The average percentage recovery of sugar of the weight of sugar beets in the period 1940-1944 was 11.8 in Manitoba and 13.9 in Canada.

Operations in the province are proving successful, both technically and financially.

The possibility of combining the refining of cane sugar with beet sugar manufacture in Manitoba deserves thorough investigation.

* * * * *

There were four sugar refineries in Canada refining cane sugar in 1943 and 1944, one each in the Maritimes, Quebec, Ontario and British Columbia.

The production of granulated sugar from cane and from beets is shown for some specified years:

	Cane Lbs.	Beet Lbs.
1939	823,452,186	167,522,410
1941	836,125,171	211,625,646
1942	499,324,665	187,195,520
1943	627,247,496	127,509,410

Duty on Refined Sugar

British Preferential	\$0.83 to 1.09 per cwt
General	\$1.50 to 1.89 per cwt

Imports of Refined Sugar

Year	Cwt.	Value \$
1939	79,904	374,077
1942	155,811	486,342
1943	154,464	486,504
1944	141,822	519,955

- 50 -

Vegetable Oil

The Canadian market for domestic vegetable oil was greatly expanded by the war and the shortage of imported oils.

In 1944 there were 2 plants in Manitoba, one in Alberta, one in British Columbia and seven in Eastern Canada. Since 1944 two additional plants have been built in the west, one in Manitoba and one in Saskatchewan. In addition there are also two plants under construction, one in Saskatchewan, and one at Fort William, Ontario, with head office at Winnipeg.

Only total Canadian production figures are available. The principal statistics are shown for the years 1939, 1943 and 1944.

Year	number of Plants	Capital Invested \$	Number of Employees	Salaries and Wages \$	Cost of Materials \$	Gross Value of Production \$
1939	9	3,125,013	239	273,309	3,099,816	4,156,150
1943	11	4,249,673	393	592,673	7,609,395	9,488,623
1944	11	-	462	728,586	10,641,800	13,187,683

Production of Quantity and Value

	1939		1943	
	Quantity	Value \$	Quantity	Value \$
Linseed Oil, Raw	2,356,581 gals.	1,488,791	4,159,890 gals.	2,958,788
Linseed Oil, Boiled	870,312 "	569,890	988,756 "	744,375
Linseed Oil, Special	1,128,020 "	782,756	2,672,075 "	2,142,970
Linseed Oilcake	9,089 tons	256,214	-	-
Linseed Oilcake Meal	26,283 "	909,919	65,886 tons	2,618,383
Linseed Meal	186 "	16,639	44 "	3,843
Soap	2,065,512 lbs.	72,319	1,711,546 lbs.	74,280
Soyabean Products	1,033 tons	59,982	Included with all other products.	
All other products including cocoanut oil	-	-		945,984
		<u>\$4,156,510</u>		<u>\$9,488,623</u>

<u>Production 1944</u>		
	<u>Quantity</u>	<u>Value</u> \$
Linseed Oil Raw	5,763,741 gals.	4,113,138
Linseed Oil Boiled	1,200,371 "	910,365
Linseed Oil Special	2,815,631 "	2,319,032
Other Oils (cocoanut, peanut rapeseed, soyabean and sunflower)	22,899,890 lbs.	2,264,050
Linseed Oilcake and oilcake meal	77,923 tons	3,033,939
Other oilcake and oilcake meal	10,656 "	391,739
Linseed meal	127 "	11,585
Soap	2,300,584 lbs.	102,245
Other Products		41,590
		<u>\$13,187,683</u>

<u>Flaxseed Used</u>			
	<u>Number of Bushels</u>	<u>Cost at Mill</u> \$	<u>Average cost per Bushel</u> \$
1939			
Canadian	924,592	1,391,671	1.50
Imported	1,058,164	1,509,939	1.43
Total	1,982,756	2,901,610	1.46
1943			
All Canadian	3,559,375	6,378,616	1.71
1944			
All Canadian	4,388,657	7,766,380	1.78

Flaxseed constituted 93-1/2% of the cost of materials in 1939, 83.8% in 1943 and about 73% in 1944.

In 1939 only flaxseed and some soyabeans were crushed. By 1943 cocoanut was added and in 1944 peanut, rapeseed and sunflower seed.

Starch and Glucose from Wheat

There is no conversion of wheat to starch or glucose at the present time in Manitoba. The industry has, however, been established recently on a limited scale in Saskatchewan and in Ontario, at the head of the Lakes.

Starch is widely used as a foodstuff; it also serves as the

raw material in the manufacture of glucose, syrups and dextrins.

In addition it is used extensively in the textile and paper industries; and, to a lesser extent, as an adhesive, and in laundries.

The estimated consumption of starch and its products in Canada is roughly 125,000,000 lbs. annually. Of this amount, 70% is utilized for human consumption and the remainder in the various industries as stated above. This would require some 5,000,000 bushels of wheat if wheat were used.

The yield of starch per bushel of wheat is 27.7 lbs. with saleable residues equal to some 18 lbs. per bushel. The yield of glucose, which is derived from the starch in the wheat, is some 24 lbs. per bushel of wheat. In manufacturing glucose and syrups, the same saleable residues are obtained as in the manufacture of starch.

Any starch and starch products industry based on wheat must be prepared to meet competition from cheaper cereals such as corn and must not rely for its survival on the use of inferior grades of wheat, since the supply of these grades is not sufficiently regular to stabilize manufacturing costs.

There is a considerable market in Canada for starch and glucose in foodstuff industries and for starch in textile and paper manufacture; but those industries which consume the largest quantities of these materials are not located in the Prairie Provinces.

Dried Alfalfa Meal

High quality dried alfalfa meal is not produced in Manitoba. Its production would require artificial driers and, hence, high fuel costs, as compared with production in Alberta or Saskatchewan, where cheap fuel is available.

Industrial Ethyl Alcohol

Much discussion has taken place during the last several years in regard to the establishing of a plant in Manitoba or elsewhere in the Prairies for the production of industrial alcohol from wheat.

The successful operation of such a plant would depend largely on the utilization of low cost wheat and low cost fuel. Based on pre-war prices, in order to compete with raw materials, such as petroleum gases, molasses and waste sulphite liquors, it would be necessary to purchase wheat at a price of about 25 cents per bushel. Only under very distressed conditions would such a price be acceptable to the Western farmer. Moreover, the market for industrial alcohol in Western Canada is limited.

Under present conditions the building of a plant in Manitoba would not appear feasible.

Butyl Alcohol

Butyl alcohol may be readily made from wheat. It commands a higher price than ethyl alcohol, which affords a wider spread between the cost of raw material and the value of the finished product. The market in the Prairies is, however, insufficient to support economic production, and the delivered cost to larger markets would not be competitive, owing to the fact that the costs of the raw materials normally used in its production are cheaper than wheat.

Butylene Glycol

The National Research Council is carrying out research work on the production of butylene glycol from wheat by fermentation. As there is a possibility of its commercial use as an anti-freeze, its manufacture in the West is of interest.

Straw Utilization

Cereal Straw

Studies of the utilization of straw have been very numerous for many years, and various uses have been suggested. Among these are the following: stock feed, soil conditioner, fuel, raw material for production of fibreboard, paper, plastics, etc.

In Eastern Canada, where mixed farming is more prevalent than in the Prairies, most of the straw is used as bedding for live stock and in feed mixtures, and is thus largely returned to the soil. There is one mill producing strawboard from cereal straw in Eastern Ontario, which utilizes a limited amount of straw, and another producing cigarette paper from flax straw. In the Prairie Provinces as a whole, the larger proportion of the straw is burned and the ash only, in this case, is returned to the soil. In recent years a larger quantity of straw has been used as live stock bedding or worked back into the soil. The increased use of the reaper-thresher combine has probably been a contributing factor in the latter case. The proportion of straw burned in Manitoba is lower than that in Saskatchewan, owing to the greater degree of mixed farming. Although many agriculturists claim that the proper utilization of cereal straw is in returning it to the soil, either by direct or indirect means, there is a wide divergence of opinion in the matter as to its beneficial or harmful effects on the soil.

As a fuel, both cereal and flax straw have a B.t.u. of about 7,500 per pound. Their bulkiness, however, militates against their use for this purpose, and their use as a fuel will continue to be very limited until some cheap method producing a concentrated product competitive with other fuels by briquetting or other means, is developed.

The chief industrial use for cereal straw to date has been in the production of fibre board and paper. The fibre board is of two types; one is used in making corrugated fibre boxes, generally termed strawboard, and the other as a rigid insulating board. The former type is fairly widely made in the United States and, as previously noted, there is one plant in Ontario. This strawboard is in reality just a coarse paper. The attempts to produce rigid insulating board by various companies in the United States have not met with much success. To the best of our knowledge, fine papers from cereal straw are not made in America but are made in Europe.

The possibilities for establishing a plant in Manitoba to produce strawboard, rigid insulating board and paper do not appear favourable at the present time. The market for strawboard is diminishing and is too small in the Prairies to support the quantity necessary for economical production. There is, however, a relatively large market for insulating board which, after the present backlog is satisfied, will probably be in the order of 15,000,000 square feet per year. This is exclusive of gypsum board. This market is now supplied by production in Winnipeg, Eastern Canada and International Falls, U.S.A., the raw material being poplar and wood waste.

It is difficult to obtain a close estimate of the cost of straw laid down at a particular centre, owing to the different collection methods necessary and the wide variation in collection costs claimed. However, from studies of various estimates of production costs of rigid board manufactured from cereal straw, poplar and wood wastes, and from a comparison of the quality of the boards, it seems very doubtful that, under normal conditions, a plant producing board from straw could successfully compete with board produced from poplar or wood wastes.

This picture would change should cereal straw become readily available at lower costs than wood and a board be developed equal to or better than the present boards made from wood. The same analogy holds for the production of fine papers from cereal straw.

Fibre and Seed Flax Straws

Owing mainly to climatic conditions in the Prairie Provinces, the growing and processing of fibre flax on a commercial scale have not been successful in the past. Some authorities on the subject have stated that it is impossible to grow No. 1 grade fibre flax in the West. At the present time, the Dominion Government is carrying out in Manitoba extensive experiments based on research and improved methods of growing and processing fibre flax to determine whether or not a successful industry can be developed around the growing of fibre flax in the West. It is too early yet to base any conclusions on the results obtained.

Large quantities of seed flax are grown on the Prairies and, as with cereals, the utilization of the straw creates quite a problem. A relatively small proportion of the straw is sold for the production of upholstery tow and for the production of cigarette paper in the plant noted above. As the demand for these products is not high, in particular the latter, further expansion in this market is not expected. The fibre of seed flax is shorter than that of fibre flax and is not normally suitable for conversion into yarn for weaving. Recent claims have been made for a process which will convert the fibre into a yarn equal to regular linen. As this process has yet to be proven commercially, it is impossible to estimate the possibilities.

The production of binder-twine from seed flax straw has not proven very satisfactory, and it is extremely doubtful that a successful commercial development will result. In regard to its utilization as a

soil conditioner, a fuel, and in the production of strawboard or insulation board, the same remarks apply as have been made regarding utilization of cereal straw.

TEXTILES AND TEXTILE PRODUCTS INDUSTRIES

Men's Factory Clothing

Women's Factory Clothing

Hats and Caps

Bags, Cotton and Jute

Awnings, Tents and Sails

Woollen Textiles

Cotton

Cordage, Rope and Twine

Power Laundries, Cleaning and Dyeing Plants

Men's Factory Clothing

In Manitoba the manufacture of men's factory clothing is located in Winnipeg, Portage la Prairie and Selkirk. The output of these factories is some 6% of the Canadian total, and has risen from \$4,114,406 in 1939 to \$8,327,702 in 1943 maintaining, during that period, its position relative to the rest of this industry in Canada.

These factories have tended to specialize in the manufacture of overalls and work shirts. In 1943 the gross value of their production of these articles of clothing represented 61.4% of the gross value of their total production and 21.9% of the Canadian total for such articles.

The number of establishments, capital invested, etc. are shown in the following table for Manitoba and Canada as a whole for the years 1939 and 1943.

	Number of Firms	Capital Invested \$	Number of Employees	Salaries and Wages \$	Cost of Materials \$	Gross Value of Production \$
Manitoba						
1939	28	2,063,915	1,331	1,033,710	2,561,007	4,114,406
1943	30	3,135,408	1,968	1,915,748	5,626,878	8,327,702
Canada						
1939	375	40,791,892	22,425	20,068,061	39,991,597	70,807,930
1943	410	60,916,655	30,885	37,267,075	91,554,837	149,800,112

A breakdown of the industry in Manitoba for 1943 is shown as follows. The establishments are classified according to their chief production.

Group	Number of Firms	Capital Invested \$	Number of Employees	Salaries and Wages \$	Cost of Materials \$	Gross Value of Production \$
Windbreakers & Work Pants	12	1,010,666	457	455,503	1,295,873	1,887,449
Overalls & Work Shirts	12	1,609,787	1,194	1,143,938	3,478,997	5,115,167
Trousers and Separate Garments	4	316,412	204	217,522	658,871	988,346
Other	2	198,543	113	98,785	193,137	336,740
Total	30	\$3,135,408	1,968	\$1,915,748	\$5,626,878	\$8,327,702

The percentage breakdown by groups of the gross value of production in 1943 follows.

	Percentage
Windbreakers and Work Pants	22.7
Overalls and Work Shirts	61.4
Trousers and Separate Garments	11.8
All Others	4.1
Total	100.0%

With regard to men's factory suits and overcoats, the gross value of production in Canada by factories under this classification amounted to about \$83,000,000 in 1943, or 55.5% of the total value of production of men's factory clothing. Of the 149 firms listed under the above classification only three are in Western Canada, one in each of the following cities; Winnipeg, Edmonton and Vancouver. The production of these three factories is relatively small. The one in Winnipeg makes men's civil uniforms.

The gross value of production of Canadian factories whose chief production is fine shirts amounted to \$14,700,000 in 1943 or

about 9.8% of the total value of men's factory clothing.

Although some fine shirts are produced in Winnipeg, there is no establishment manufacturing fine shirts as its chief production.

The gross value of production of Canadian factories classified as manufacturers of men's neckwear was about \$5,182,300 in 1943, and of men's suspenders and garters, \$3,279,700. There is no neckwear production in Manitoba and only minor production in suspenders.

As previously mentioned, in classifying the industry, the factories are grouped according to their main production. For example factories classified under the suits and overcoats group may also produce jackets, separate trousers and other apparel.

The selling value of individual types of men's clothing is not available for Manitoba but for Canada as a whole is as follows:

	1943
	Selling Value at Canadian Factories
	\$
Suits	25,477,737
Overcoats	19,796,299
Windbreakers	3,004,790
Work Pants	6,727,621
Work Shirts	6,066,806
Uniforms	24,103,541
Overalls	7,656,602
Trousers	11,201,057
Jackets	5,471,869
Fine Shirts	10,430,683
Neckties	4,111,813
Garters and Suspenders	1,494,533
Pyjamas	1,755,388
Mackinaw Coats and Shirts	1,206,497
Sports Clothing	2,450,992
Scarves and Mufflers	893,533
Cotton Underwear	669,958

Various items of men's factory clothing are listed below in three groups indicating the degree of representation of their production in Manitoba.

<u>Well Represented</u>	<u>Represented</u>	<u>Unrepresented</u>
Overalls	Belts (leather)	Gowns (dressing)
Pants (fine)	Gloves (fine)	Handkerchiefs
Pants (work)	Hats (wool felt)	Hats (fur felt)
Shirts (work)	Shirts (fine)	Hats (straw)
Windbreakers	Socks (heavy)	Neckties
Caps	Suspenders	Pyjamas
Coats (leather)	Sweaters	Raincoats
Gloves (work)	Uniforms	Scarfs and Mufflers
		Socks (fine)
		Suits and Overcoats (factory)
		Underwear

Women's Factory Clothing

The women's factory clothing industry of Manitoba is all located in Winnipeg. In 1939 this industry produced articles of clothing to a value of \$2,741,507, or 4.7% of the Canadian total of \$57,281,666. In 1943 the industry had risen to be the eighth industry of the province with a gross value of production of \$6,758,069, or 5.4% of the Canadian total of \$124,837,789. The industry has specialized in the manufacture of coats and suits. In 1943 the gross value of this production represented 80.6% of the total value of women's factory clothing produced in Manitoba in that year and 16.3% of the value of the goods of this type produced in Canada.

The principal statistics of the industry are as follows for Manitoba and Canada for the years 1939 and 1943.

	<u>Number of Firms</u>	<u>Capital Invested \$</u>	<u>Number of Employees</u>	<u>Salaries and Wages \$</u>	<u>Cost of Materials \$</u>	<u>Gross Value of Production \$</u>
Manitoba						
1939	26	1,154,503	929	803,938	1,747,229	2,741,507
1943	27	2,100,124	1,396	1,563,377	4,208,470	6,758,069
Canada						
1939	575	26,054,188	19,367	16,568,612	32,778,057	57,281,666
1943	781	44,299,242	25,752	32,385,477	69,264,831	124,837,789

A breakdown of the industry in Manitoba is shown for 1943, the establishments being classified according to their chief production. The breakdown covers in excess of 99.5% of the total production.

<u>Groups</u>	<u>Number of Firms</u>	<u>Capital Invested \$</u>	<u>Number of Employees</u>	<u>Salaries and Wages \$</u>	<u>Cost of Materials \$</u>	<u>Gross Value of Production \$</u>
Coats & Suits	17	1,595,052	1,036	1,213,608	3,477,689	5,444,868
Ladies' Wear	5	275,268	203	196,098	373,635	685,920
Children's Wear	4	225,788	153	149,105	355,757	620,747

The percentage breakdown by groups of the gross value of production in 1943 follows:

	<u>Percentage</u>
Coats and Suits	80.6
Ladies' Wear	10.1
Children's Wear	9.2

Although there is in Winnipeg a small production of ladies' dresses, there is no establishment manufacturing dresses as its chief production. The total sales of individual types of women's factory clothing are not available for Manitoba, but for Canada as a whole are as follows:

Coats (women's and Misses)	27,795,584
Coats (children's)	3,266,693
Suits (women's and misses)	4,855,567
Separate Jackets	1,541,824
Dresses (women's and misses)	39,525,096
Dresses (children's)	3,367,638
Skirts (women's and Misses)	3,214,184
Blouses, (Women's)	5,181,605
Slips (women's)	4,023,500
Underwear (women's)	2,024,238
Pyjamas (women's)	1,256,324
Nightgowns (women's)	1,916,553
Bathrobes, Kimonas (women's)	3,061,891
Sportswear (women's)	2,056,198
Uniforms (nurses, etc.)	883,269

Various items of women's wear are listed below in three groups indicating the degree of representation of their production in Manitoba.

Well Represented

Coats
Sports Wear
Suits

Represented

Blouses
Dresses
Gloves (leather)
Millinery
Neckwear
Sweaters
Slips
Uniforms

Unrepresented

Corsets and Girdles
Gloves (fabric)
Hosiery
Raincoats
Skirts
Underwear (cotton, wool, etc.)

Hats and Caps

The principal products of this industry can be divided roughly into four classes -

1. Men's Hats - fur felt, wool felt, straw
2. Women's and Children's Hats
3. Caps - cloth, uniform, fur, leather, etc.
4. Hat and Cap Makers' Materials

In Manitoba the industry is substantially represented in all classes of caps. Only one plant produces women's and children's hats; it also makes men's wool felt hats. Men's hats (fur felt and straw) as well as hat and cap makers' materials are not made in the province.

The principal statistics for Canada and Manitoba for 1939 and 1943 are given:

	<u>Number of Plants</u>	<u>Capital Invested \$</u>	<u>Number of Employees</u>	<u>Salaries and Wages \$</u>	<u>Gross Value of Production \$</u>
Manitoba					
1939	14	329,935	172	148,255	482,248
1943	10	406,810	319	299,625	1,255,356
Canada					
1939	156	7,546,844	4,762	4,487,446	12,973,827
1943	167	9,583,006	5,314	6,872,916	22,066,150

The total Canadian production of caps only in the industry was \$1,700,564 in 1939, and \$3,860,963 in 1943, equal to about 13% and 17% respectively of the total production.

As the production of the industry in Manitoba is largely confined to the manufacture of caps, Manitoba produced in 1939 about 28% and, in 1943, about 33% of all caps made in Canada. From this it is apparent that cap manufacturers in the province are finding markets beyond the boundaries of Manitoba. Hats (men's, women's and children's) are largely supplied from Eastern Canada.

In 1941 the value of millinery sold by retail merchants in Manitoba was \$993,000.

A breakdown of the various groups making up the industry in Canada is given for 1944. As there are certain groups making both hats and caps, the figures do not agree in total with the actual items made.

Men's hat section	\$6,485,353
Women's and children's hat section	9,227,706
Caps section	4,607,262
Hat and cap makers' material	1,745,829
	<hr/>
	\$22,066,150

Bags, Cotton and Jute

The gross value of the cotton and jute bags, produced in Manitoba in its four factories located in Greater Winnipeg, was \$2,198,932 in 1939 and had risen to \$6,584,755 in 1943 to become the ninth industry in the province. Production of these articles in Canada for the corresponding period rose from a value of \$10,320,714 to \$24,085,408, which means that the industry in Manitoba which produced 21.3% of the Canadian output in 1939 had increased its production to 27.3% of the Canadian total in 1943.

The capital invested, number of employees and other statistics are shown in the following table for Manitoba and Canada for the years 1939 and 1943.

	Number of Farms	Capital Invested \$	Number of Employees	Salaries and Wages \$	Cost of Materials \$	Gross Value of Production \$
Manitoba						
1939	4	1,649,716	171	215,319	1,692,441	2,198,932
1943	4	2,871,694	243	326,340	5,660,956	6,584,755
Canada						
1939	27	6,342,569	976	1,013,334	8,057,837	10,320,714
1943	30	9,899,757	1,418	1,672,252	19,822,334	24,085,408

The number of cotton and jute bags produced in Manitoba is not available but the Canadian production in 1943 was 5,689,093 dozen cotton and 4,640,556 dozen jute bags.

Awnings, Tents and Sails

There are four plants in Manitoba manufacturing products of the awning, tent and sail industry. Their production rose in direct relation to the increased Canadian production, being 2% in both 1939 and 1943.

The principal statistics for Manitoba and Canada for 1939 and 1943 are as follows:

	No. of Plants	Capital Invested \$	Number of Employees	Salaries & Wages \$	Gross Value of Production \$
Manitoba					
1939	4	35,958	21	16,390	49,260
1943	4	70,826	41	41,807	223,137
Canada					
1939	70	2,150,637	645	617,529	2,356,610
1943	77	4,110,935	1,868	2,147,950	11,033,694

The value of the principal products of this industry in Canada in 1939 was:

	\$
Awnings	432,830
Tents	346,874
Covers (including radiator)	236,798
Bags	234,514

These represented slightly over 50% of the total production, the remainder of the output consisting of a varied assortment of other items. The total output in 1939 amounted to \$2,356,610.

The demands of the armed forces for products made by this industry were responsible for a substantial increase in production during the war years and, by 1943, this had risen to a value of \$11,033,694.

Woollen Textiles

Woollen mills are classified into four groups according to the type of production:

1. Woollen Cloth Mills
2. Woollen Yarn Mills
3. Carpet, Mat and Rug Mills
4. Miscellaneous Woollen Goods Mills.

The last group includes those mills producing such products as blankets, paper makers' felt, batts and batting, pulled wool, rags and wipers etc.

In 1939 there were 144 mills in Canada and 168 in 1943. There were 4 mills in the Prairie Provinces in both years, three in Manitoba and one in Alberta. At present there are five mills in the Prairie Provinces, one having begun operations during 1946 in Saskatchewan. With the exception of one mill in Manitoba in the carpet, mats and rugs group, the Prairie mills are classified as woollen cloth mills.

Actual production figures for Manitoba and the Prairie Provinces are not published and are not readily available.

The gross value of production for Canada of the mills classified by groups is shown for 1939 and 1943. The production of 1942 was slightly higher than that of 1943.

	1939	1943
	<u>\$</u>	<u>\$</u>
Woollen Cloth	21,878,459	53,223,954
Woollen Yarn	9,576,174	20,206,649
Carpets, Mats and Rugs	4,349,460	5,763,926
Other Woollen Goods	8,067,971	17,300,401
Total	<u>43,872,064</u>	<u>96,494,930</u>

About 95% of the production was accounted for in Ontario and Quebec.

The other principal statistics for Canada are as follows:

	1939	1943
Capital Invested	\$22,394,490	\$29,598,969
Number of Employees	5,986	8,694
Salaries & Wages	\$ 5,486,944	\$11,139,587
Cost of Materials	\$11,910,253	\$31,434,044

The production of some materials is shown for the years 1939

and 1943:

	1939		1943	
	Quantity	Value \$	Quantity	Value \$
Suitings:				
Woollen & Woollen Mixtures	14,226,128 yds.	16,677,175	22,780,965 yds.	42,514,099
Household Blankets:				
Woollen	283,191 prs.	1,578,333	537,420 prs.	4,504,781
Paper makers' Felt	2,259,269 lbs.	3,011,176	1,473,582 lbs.	2,729,812
Rugs & Squares:				
Wilton	-	1,511,755	-	1,423,230
Axminster	-	1,882,053	-	2,157,890
Yarn:				
Woollen	6,234,659 lbs.	2,894,279	8,034,571 lbs.	5,056,720
Worsted	5,086,705 lbs.	4,911,616	8,237,210 lbs.	11,288,027
Shoddy, Mungo & Wool Extract	7,263,579 lbs.	920,849	2,199,570 lbs.	1,889,322
Pulled Wool	3,204,837 lbs.	926,184	5,143,438 lbs.	2,176,843
Batts, Flocks & Rolls	5,040,083 lbs.	244,398	10,578,533 lbs.	699,554

The consumption of wool(greasy, pulled and scoured) as purchased by mills is as follows:

	1939		1943	
	Lbs.	Cost Value at Mill \$	Lbs.	Cost Value at Mill \$
Domestic	6,106,150	1,381,652	6,866,522	2,968,933
Imported	13,671,078	3,106,709	28,624,532	13,867,277
Total	19,777,228	4,488,361	35,491,054	16,836,210
% Domestic	30.8	31.0	19.3	17.6

Cotton

To date there has been no manufacture of cotton cloth in Manitoba. Consideration, however, has been given to the establishment of the industry, since there is an appreciable demand in the province for cotton cloth used in manufacture of certain types of factory clothing, bags, etc.

Cordage, Rope and Twine

There is no production of cordage, rope and twine in Manitoba.

The only plant in Western Canada is in British Columbia. Ontario produces about 80% of the Canadian total.

The chief statistics for Canada are shown for the years 1939 and 1943:

	No. of Plants	Capital Invested \$	No. of Employees	Salaries & Wages \$	Cost of Materials \$	Gross Value of Production \$
1939	10	10,376,100	978	1,055,702	2,710,778	4,966,074
1943	11	13,552,590	1,531	2,279,708	8,197,636	12,650,931

The classification of production is shown in the following table for 1939 and 1943:

	1939		1943	
	Production Lbs.	Selling Value At Factory \$	Production Lbs.	Selling Value At Factory \$
Binder Twine:				
All Sisal	20,157,557	1,194,725	19,509,317	2,583,274
Chiefly Sisal	29,107,803	1,595,251	55,303,917	4,518,779
Other Twines:				
Hemp)			158,005	113,242
Sisal)			123,572	20,579
Jute)	10,190,183	1,806,317	4,988,163	1,345,111
All Other)			119,459	75,662
Rope:				
Manilla	6,694,423	1,002,800	1,775,350	284,073
Sisal	1,156,237	149,552	15,144,138	2,350,975
Cotton)			83,800	39,666
Jute)	277,939	77,114	587,910	94,658
Hemp)			599,050	442,587
All Other	73,481	27,941	43,001	13,008

Consumption of Binder Twine in Canada

	Production Cwt.	Imports Cwt.	Exports Cwt.	Apparent Consumption Cwt.
1939	492,654	257,152	177,787	572,019
1943	748,132	22,515	181,356	589,291
	<u>Total Value</u>	<u>Total Value</u>	<u>Total Value</u>	<u>Total Value</u>
1939	\$2,789,976	\$1,491,964	\$ 969,263	\$3,312,677
1943	\$7,102,053	\$ 195,593	\$1,770,419	\$5,527,227
		<u>Value per Cwt.</u>		
1939	\$5.68	\$5.80	\$5.45	\$5.79
1943	\$9.49	\$8.69	\$9.76	\$9.38

Power Laundries, Cleaning & Dyeing

Manitoba ranks fourth by provinces in value of work performed in 1943 in both groups - fifth in the power laundries and third in cleaning and dyeing plants.

The chief statistics for both groups combined are shown for Manitoba and Canada as a whole for 1943:

				1 9 4 3		
	<u>Plants</u>	<u>Capital</u>	<u>Number of</u>	<u>Salaries</u>	<u>Cost of</u>	<u>Value of Work</u>
	<u>No. of</u>	<u>Invested</u>	<u>Employees</u>	<u>& Wages</u>	<u>Materials</u>	<u>Performed</u>
		\$		\$	\$	\$
Manitoba	28	1,696,948	1,552	1,460,518	348,912	2,721,600
Canada	587	30,755,570	20,597	20,204,624	4,049,361	38,654,761

Power Laundries - 1943

Manitoba	9	909,804	788	682,282	178,067	1,401,110
Canada	225	19,433,014	13,209	12,338,829	2,530,464	23,436,392

Cleaning & Dyeing Plants - 1943

Manitoba	19	787,144	764	778,236	170,845	1,320,490
Canada	362	11,322,556	7,388	7,865,795	1,518,897	15,218,369

WOOD AND PAPER PRODUCTS INDUSTRIES

Printing Trades

Furniture

Carriages, Wagons and Sleighs

Boxes, Baskets and Crates

Paper Boxes and Bags

Pulp and Paper Mills

Sawmills

Printing Trades

The printing trades as a whole are reasonably well represented in Manitoba. In the gross value of production, Manitoba ranked third by provinces in 1939 and fourth in 1943 with 6.7% and 5.6% respectively of the Canadian production. The value of production in Manitoba in the same years was equal to about 3% of the total value of manufacturing industries in the province.

The gross value of production in Manitoba, the Prairie Provinces and Canada for 1939 and 1943 is shown in the following table:

	<u>Manitoba</u>		<u>Prairie Provinces</u>		<u>Canada</u>	
	<u>1939</u>	<u>1943</u>	<u>1939</u>	<u>1943</u>	<u>1939</u>	<u>1943</u>
	<u>\$</u>	<u>\$</u>	<u>\$</u>	<u>\$</u>	<u>\$</u>	<u>\$</u>
Printing & Publishing	3,978,103	4,224,666	9,057,393	9,963,177	61,903,495	76,054,227
Printing & Bookbinding	3,152,296	3,485,111	4,186,287	5,272,795	38,153,017	54,104,517
Engraving, Stereotyping & Electrotyping	467,393	541,508) - -		7,556,223	10,405,728
) 1,327,256 1,312,452			
Lithographing, Trade Composition, Blue Printing	415,032	521,481) 11,144,320 14,201,113		1,077,045	1,604,959
) 1,077,045 1,604,959			
Total	<u>8,012,824</u>	<u>8,772,766</u>	<u>14,570,396</u>	<u>16,548,424</u>	<u>119,834,100</u>	<u>156,370,544</u>

The total production of the Prairie Provinces represented 12.1% of that of Canada in 1939 and 10.5% in 1943.

Manitoba's percentage of the gross value of the Canadian production, as shown by the above groups, is as follows:

	<u>1939</u>	<u>1943</u>
	<u>%</u>	<u>%</u>
Printing & Publishing	6.4	5.5
Printing & Bookbinding	8.3	6.4
Engraving, Stereotyping & Electrotyping	6.2	5.2
Lithographing, Trade Composition, Blue Printing	3.4	3.3

The number of establishments, capital invested and other statistics for Manitoba are shown in the following table:

	No. of Firms	Capital Invested \$	Number of Employees	Salaries & Wages \$	Cost of Materials \$
Printing & Publishing					
1939	84	3,525,959	1,181	1,659,753	765,292
1943	75	3,568,842	1,001	1,539,987	748,688
Printing & Bookbinding					
1939	80	4,124,550	1,178	1,439,883	1,191,337
1943	60	4,307,785	1,139	1,536,124	1,215,320
Engraving, Stereotyping & Electrotyping					
1939	8	422,663	176	329,873	51,740
1943	6	370,252	163	369,258	65,537
Lithographing, Trade Composition, Blue Printing					
1939	5	639,243	129	186,368	129,743
1943	4	721,173	142	221,480	159,439
Total					
1939	177	8,712,415	2,664	3,615,877	2,138,112
1943	172	8,968,052	2,445	3,666,847	2,189,075

The total capital invested is higher than the gross value of production per year.

Furniture

The furniture industry comprises firms engaged wholly or principally in the manufacture of wooden furniture of all kinds. There are, however, a number of firms classified in other industrial groups which make furniture as a side line to their principal production. Firms in the furniture industry also manufacture commodities other than furniture as secondary products.

Of the total production in 1943, Ontario accounted for 57%, Quebec 32%, British Columbia 7%, Manitoba 3% and the remaining provinces only 1%.

The principal statistics for 1939 and 1943 for Canada and Manitoba are given:

	No. of Firms	Capital Invested \$	Number of Employees	Salaries & Wages \$	Gross Value of Production \$
Manitoba					
1939	31	729,080	327	310,796	927,960
1943	31	632,037	349	451,982	1,307,930
Canada					
1939	378	27,923,372	10,572	9,959,270	17,923,816
1943	449	32,174,700	13,440	25,629,270	47,107,525

In the last twenty years the industry has had wide fluctuations in output. The Canadian production, which was \$44,000,000 in 1929, dropped to \$15,000,000 in 1933. It gradually increased from \$17,000,000 in 1940 and reached \$47,000,000 in 1943, a figure three times that of 1933. Even allowing an estimated 40% decline in the price level between 1929 and 1933, the physical decline in production was about 50%. Correspondingly increased prices since 1939 only account for a small portion of the subsequent increase in output.

The principal products manufactured in the industry consist chiefly of household furniture which, in 1943, amounted to \$28,957,931 - 60% of the total. The largest item consisted of bedroom furniture valued at \$10,268,197, followed by living-room furniture, including upholstered living-room furniture and studio couches.

A breakdown of the gross value of the Canadian production by principal products for 1939 and 1943 will be found on the following page:

Furniture - Gross Value of Production

	1939	1943
	\$	\$
Upholstered & Other Living-room	6,082,003	9,926,498
Bedroom	5,300,425	10,268,197
Dining-room	2,147,003	2,735,592
Breakfast-room	-	1,805,881
Kitchen	1,735,253	1,448,263
Office and Store	1,873,640	3,687,123
Church, School and Public Buildings	1,241,998	960,182
All Other Household	2,165,970	2,955,759
Radio Cabinets	691,866	70,075
Camp, Lawn, Verandah	302,515	271,835
Cedar and Other Chests	411,277	623,396
Picture and Mirror Frames	292,140	135,903
Children's	173,368	897,783
Furniture Frames made for sale to be finished elsewhere	842,669	1,149,211
Amount received for Repairs	453,428	589,434
Other Cabinet Work	359,408	911,021
Moulding for Picture & Mirror Frames	-	301,943
Framed Pictures	-	495,497
Wooden Boxes and Crates	-	487,506
Custom Upholstering, Re-upholstering & Other Services	-	908,399
All Other Products, etc.	<u>1,556,307</u>	<u>6,446,027</u>
Total	<u>25,629,270</u>	<u>47,107,525</u>

Note: In 1943 "all other products" of \$6,446,027 included a wide assortment of various items on which details are not available. Included were items of aircraft parts and naval equipment.

Of the total production of household furniture, 45% consisted of bed-room and dining-room furniture, of which only a small quantity is made in Manitoba.

Although no breakdown of Manitoba production is available, it can be stated that the greater proportion of the production consisted of upholstered furniture. The total production of the industry in Saskatchewan and Alberta amounted to \$433,516 in 1943 - about one-third of Manitoba's output.

Retail sales for the Prairie Provinces in 1941 were -

Manitoba	3,016,700
Saskatchewan	2,564,300
Alberta	<u>3,967,600</u>
Total	<u>9,548,600</u>

On a factory cost basis, this would be roughly \$6,000,000.

On the basis of population and 1943 production, the estimated market for various types of furniture in Manitoba and the Prairie Provinces is as follows:

	Manitoba \$	Prairie Provinces \$
Bedroom	650,000	2,200,000
Living-room	640,000	2,100,000
Dining-room	175,000	575,000
Breakfast-room	115,000	380,000
Kitchen	93,000	305,000
All Other	<u>160,000</u>	<u>520,000</u>
Total	<u>2,833,000</u>	<u>6,080,000</u>

The total production of the furniture industry in the Prairies is less than \$2,000,000. As already stated, upholstered furniture accounts for the greater proportion of this. There is, therefore, a market of over \$2,000,000 for dining-room and bedroom furniture alone in the Prairies.

Sawn lumber is the most important raw material. Hardwoods used are to a large extent imported from the United States and tropical countries, while the soft woods are chiefly the products of Canadian sawmills. Out of the total materials used in the industry in 1943 amounting to \$19,062,790, hardwood was the largest item, accounting for \$5,132,220; soft wood lumber accounted for \$1,083,216; while upholstering and studio couch fabrics cost \$1,739,113. Among the other items of materials used were -

Veneer	1,034,570
Plywood furniture	1,085,487
Frames purchased	895,500
Paints & Varnishes	956,881
Stuffing Materials	856,555
Hardware	456,761

Carriages, Wagons & Sleighs

This industry includes establishments engaged wholly or chiefly in the manufacture of complete vehicles, such as carriages, wagons, sleighs; or vehicle supplies, such as hubs, rims, axles and other wooden parts.

The industry is relatively small, as will be seen from the following statistics for Manitoba and Canada:

	No. of Plants	Capital Invested \$	Number of Employees	Salaries & Wages \$	Gross Value of Production \$
Manitoba					
1939	3	177,774	52	50,393	143,417
1943	3	155,641	57	79,425	225,013
Canada					
1939	80	996,141	314	259,417	395,860
1943	57	Not Available	347	614,838	1,051,485

It will be seen that the production in Manitoba relative to Canada as a whole was 23.3% in 1939 and 21.4% in 1943, so that, on a per capita basis, this industry is well represented.

Boxes, Baskets and Crates

This industry includes establishments engaged wholly or chiefly in the manufacture of boxes, baskets and similar containers. There are a number of establishments in other industrial groups which make boxes, etc. as a side line.

In 1940, Manitoba production was 5% of the Canadian total; in 1944, it was 4.7%. The increase in production in Canada in 1944 over 1940 was 128%; in Manitoba it was 114%.

Production in this industry under peace-time conditions is governed largely in Manitoba by the demand for butter, fish and cheese boxes.

The principal statistics for Manitoba for 1940 and 1944 are as follows: Comparative statistics are also given for Canada.

	No. of Firms	Capital Invested \$	Number of Employees	Salaries & Wages \$	Gross Value of Production \$
Manitoba					
1940	12	500,538	261	218,167	569,671
1944	19	Not Available	339	403,808	1,218,151
Canada					
1940	141	9,226,166	4,216	3,664,068	7,209,172
1944	165	Not Available	5,892	11,378,668	25,963,705

Paper Boxes and Bags

This industry includes establishments engaged wholly or principally in the manufacture of paper bags and boxes. There are, however, a number of firms classified in other industrial groups which make paper boxes and bags as a side line to their principal production.

Manitoba production equalled 5.5% of the Canadian total in 1939 and 5.7% in 1943.

The principal statistics of the industry for Manitoba and Canada for 1939 and 1943 follow:

	No. of Firms	Capital Invested \$	Number of Employees	Salaries & Wages \$	Gross Value of Production \$
Manitoba					
1939	7	1,295,604	292	346,586	1,645,290
1943	7	1,627,791	389	559,978	3,062,803
Canada					
1939	152	24,046,931	6,742	7,150,013	29,832,038
1943	155	28,216,082	10,037	12,111,774	53,865,676

The products manufactured in Canada in 1939 and 1943 are shown below in the order of their importance. Separate figures for Manitoba are not available:

Canada	1939	1943
<u> </u>	<u> \$ </u>	<u> \$ </u>
Corrugated Boxes	9,598,854	18,805,937
Folding Boxes	6,546,281	11,351,031
Set Up Boxes	4,886,980	7,198,114
Bags N.E.S.	2,197,372	4,845,710
Self Opening Bags	1,714,146	2,520,331
Fibre Board Boxes	754,364	633,140
Corrugated Paper & Wrappers	496,291	509,860
Special Bags	293,143	497,942
Round Liquid Containers	253,265	722,330
Tags and Labels	237,483	357,606
Millinery Bags	128,159	247,888
Printing	102,021	A
Miscellaneous Boxes & Cartons	95,908	108,861
Mailing Tubes	92,357	109,566
Egg Case Fillers	71,736	A
Ice-Cream Pails	36,281	97,804
All Other Products	<u>2,327,397</u>	<u>5,859,556</u>
Total	<u>29,832,038</u>	<u>53,865,676</u>

A - Included in other products

Pulp and Paper Mills
Sawmills

These industries are covered under "Forestry" in Volume III, pages 56 and 55 respectively.

IRON AND STEEL PRODUCTS INDUSTRIES

Railway Rolling Stock

Primary Iron and Steel

Sheet Metal Products

Farm Implements and Farm Machinery

Aircraft

Machinery

Miscellaneous Iron and Steel

Iron Castings

Boilers, Tank and Plate Work

Bridge Building & Structural Steel

Automobile Manufacturing & Automobile Parts

Hardware, Tools and Cutlery

Cooking and Heating Apparatus

Wire and Wire Goods

Railway Rolling Stock

This industry manufactures and repairs railway cars and locomotives and manufactures wheels, brakes, tires, bolsters, springs etc.

It is one of the four leading industries of Manitoba; is the largest employer of labour, and has the largest payroll of any group of industries in the province. The payroll represents some 20% of the total salaries and wages paid in all the manufacturing industries in the province and is almost double that of the slaughtering and packing-house industry.

The industry is concentrated in Greater Winnipeg, and any fluctuation of its activities is quickly reflected in business conditions generally in this area.

The following table gives some of the principal statistics for Manitoba:

Year	No. of Plants	Capital Invested \$	Number of Employees	Salaries & Wages \$	Gross Value of Production \$
1930	4	10,718,251	5,727	8,209,751	17,202,263
1931	3	9,660,423	3,416	4,150,512	8,230,451
1932	4	13,907,199	4,700	4,603,554	8,936,011
1933	4	13,955,918	4,242	3,763,684	7,307,355
1934	4	13,899,473	4,103	4,004,353	8,038,666
1935	4	14,242,168	4,223	4,558,528	9,264,003
1939	4	14,783,291	4,033	5,763,820	12,146,547
1942	4	16,561,694	4,654	8,189,786	16,331,730
1943	4	16,731,822	4,789	9,179,850	17,695,431
1944	4	-	4,951	9,996,198	20,187,308

It will be noted that, between 1932 and 1944, the greatest variation in number of employees was slightly over 20%.

The average annual income per employee in Manitoba for some years follows:

Year	No. of Employees	Salaries & Wages \$	Average Per Year \$
1930	5,727	8,209,751	1,434
1931	3,416	4,150,512	1,215
1933	4,242	3,763,684	887
1939	4,033	5,763,820	1,429
1943	4,789	9,179,850	1,917
1944	4,951	9,996,198	2,019

The average for the industry in Canada in 1944 was \$2,051, and Manitoba accounted for 18% of the total payroll of the industry in Canada in that year.

Production of munitions and armaments by the railway rolling stock industry in Canada was substantial. Figures for the early years of the war are not available but, in 1943, the value amounted to \$37,225,655 - 23% of the total production of the industry. This dropped to \$13,288,625, or about 8%, in 1944.

The industry is located chiefly in the provinces of Quebec, Ontario and Manitoba. Some of the principal statistics for these provinces and Canada follow:

	<u>Canada</u>	<u>Quebec</u>	<u>Ontario</u>	<u>Manitoba</u>
<u>1939</u>				
Average No. of Employees	17,569	7,317	3,615	4,033
Salaries & Wages	\$ 25,050,559	10,702,470	4,947,320	5,763,820
Gross Selling Value at Works	\$ 60,710,204	25,309,944	14,002,059	12,146,547
<u>1944</u>				
Average No. of Employees	30,495	15,788	6,868	4,789
Salaries & Wages	\$ 59,442,679	31,485,260	13,252,763	9,179,850
Gross Selling Value at Works	\$159,156,587	86,274,059	43,241,631	17,695,431

In 1939, Manitoba had 20% of the total production and, in 1944, this was reduced to 11%. Production of munitions and armaments in Quebec and Ontario to a much larger degree than in Manitoba probably accounts for this decline.

The importance of this industry to Manitoba and, particularly, to Greater Winnipeg is very evident. As already pointed out, the wages paid amount to 20% of the wages paid in all the manufacturing industries of the province. In 1943 the annual average was \$1,917 per employee, as compared with \$1,455 for all industries.

It is generally assumed that the backlog of accumulated work necessarily postponed during the war will maintain a high rate of employment for several years.

The following table shows the production of railway cars and locomotives in Canada over the past twenty years:

Year	Cars		Locomotives	
	No.	Value \$	No.	Value \$
1924	4,544	15,943,719	84	5,678,620
1925	1,435	3,415,475	8	342,000
1926	3,335	17,438,251	57	3,316,348
1929	13,242	53,933,537	98	8,389,781
1930	8,348	34,533,255	108	6,772,938
1931	5,288	19,782,973	26	1,897,493
1932	282	358,287	3	61,072
1933	589	1,726,227		
1934	31	150,315		
1935	550	2,017,841	4	111,500
1936	2,116	9,530,441	23	2,367,414
1937	7,504	28,827,178	46	4,862,925
1938	5,385	23,592,735	49	5,635,143
1939	2,423	9,746,179	1	16,750
1940	5,328	18,524,594	55	6,616,094
1941	2,711	9,751,295	3	163,278
1942	1,501	11,001,274	71	8,604,459
1943	6,248	24,706,354	99	10,802,695
1944	9,251	35,935,406	190	18,915,916

Primary Iron & Steel

Under the primary iron and steel industry are classified all plants engaged chiefly in the manufacture of pig iron, ferro-alloys, steel ingots and steel castings, hot rolled iron and steel products and cold drawn steel bars, strips or shapes.

The industry in Manitoba accounted for about 2.1% of the total Canadian production in 1939 and 1.8% in 1943. Some 96% of the Canadian total in both years was produced in Eastern Canada.

The gross value of production for Manitoba and Canada was as follows for the years 1939 and 1943. War demands greatly enlarged production.

	<u>Manitoba</u>	<u>Canada</u>
1939	\$ 1,610,745	\$75,934,481
1943	4,154,981	223,951,059

For the same years the number of plants, capital invested and other statistics are set out below:

	<u>No. of Plants</u>	<u>Capital Invested \$</u>	<u>Number of Employees</u>	<u>Salaries & Wages \$</u>	<u>Cost of Materials \$</u>
Manitoba					
1939	4	1,732,426	406	538,227	424,684
1943	4	2,516,811	959	1,499,389	1,313,557
Canada					
1939	54	113,660,251	13,827	20,410,517	29,629,376
1943	63	235,386,238	34,222	65,654,468	101,413,794

Pig Iron

There is no production of pig iron in Manitoba. In view of the fact that neither iron ore nor suitable coal has been developed in Manitoba, the establishment of pig iron production is improbable, unless low cost methods of electric smelting are developed.

The consumption of pig iron, as reported by consumers, is shown in the following table for 1939 and 1943, and it will be noted that the market in the Prairie Provinces is small;

	<u>Net Tons</u>	
	<u>1939</u>	<u>1943</u>
Maritimes	302,775	445,064
Quebec	28,766	67,255
Ontario	548,125	1,411,531
Manitoba	2,053	5,270
Saskatchewan	-	43
Alberta	105	177
British Columbia	1,064	1,302
Total	<u>883,428</u>	<u>1,930,642</u>

Ferro-Alloys

Canadian production of ferro-alloys is confined to Ontario and Quebec - largely in Ontario.

The production for the years 1939 to 1943 was as follows:

	<u>Net Tons</u>
1939	85,540
1940	149,394
1941	204,354
1942	209,017
1943	197,094

Steel Ingots & Direct Steel Castings

In Manitoba there are three firms operating steel furnaces. In 1943 the rated annual capacity was 59,000 tons of steel from two open hearth and three electric furnaces. In 1939 the rated capacity was 46,520 tons from two open hearth and two electric furnaces. The production was equivalent to 1.6% of the Canadian production in 1939 and 1.8% in 1943. In excess of 97% is produced in Eastern Canada.

The annual production of steel in net tons is shown for Manitoba, Eastern Canada and Canada for the years 1939 to 1943:

	<u>Net Tons</u>		
	<u>Manitoba</u>	<u>Eastern Canada</u>	<u>Canada</u>
1939	25,043	1,522,019	1,551,054
1940	39,789	2,209,147	2,253,769
1941	54,489	2,644,269	2,712,151
1942	55,067	3,025,838	3,109,851
1943	55,555	2,917,042	3,004,124

The classification of production into ingots and castings is shown for Canada for the years 1939, 1941 and 1943:

	<u>Net Tons</u>	
	<u>Ingots</u>	<u>Castings</u>
1939	1,490,057	60,997
1941	2,593,512	118,639
1943	2,846,736	157,388

Rolled and Drawn Steel

In 1939 there were thirteen hot rolling mills and three cold rolling and cold drawn plants in operation in Canada, with two mills idle. In 1943 there were fifteen hot rolling mills in production and three cold rolling and cold drawn plants. All mills but two are located in the east, one in Manitoba and one in Calgary. Manitoba's one mill is a hot rolling mill. Scrap iron is used as the raw material. The production in 1945 was approximately 40,000 tons, sufficient to take care of the market demand. This quantity represents less than 2% of the Canadian production.

The net Canadian production, in tons, of hot rolled iron and steel products for 1941 and 1943 is as follows:

	Net Tons	
	<u>1941</u>	<u>1943</u>
Blooms, billets and slabs	191,667	178,299
Rails	137,298	263,920
Rail Fastenings	41,620	41,590
Wire Rods	293,475	235,583
Structural Shapes	189,783	146,965
Bars	511,105	556,360
Plates, Sheets, Hoop Bands and Sheets	478,050	619,067
Other Hot Rolled Forms	<u>11,573</u>	<u>21,846</u>
Total	<u>1,854,571</u>	<u>2,063,630</u>

Sheet Metal Products

The main products covered under this classification are tin cans, galvanized sheets, tin plate, metal bottle caps, sheet metal building materials, steel office furniture, enamel kitchenware, galvanized ware, steel drums, eave trough and stove pipe, etc.

In 1939 the value of production in Manitoba was equivalent to 2.8% of the Canadian production and to 3.2% in 1943. The corresponding figures for the Prairie Provinces as a whole were 3.6% and 4.1%. Ontario and Quebec combined accounted for about 85% of the Canadian production in both years.

The production in Canada in 1943 included about \$16,500,000 of munitions and accessories, which represented about 17% of the total production.

The gross value of production of the sheet metal products industry in Manitoba, the Prairie Provinces and Canada is shown for the years 1939 and 1943:

	1939 \$	1943 \$
Manitoba	1,489,384	3,163,352
Prairie Provinces	1,897,049	3,955,798
Canada	51,527,229	96,923,991

The other chief statistics of the industry are shown for Manitoba and Canada:

	No. of Plants	Capital Invested \$	Number of Employees	Salaries & Wages \$	Cost of Materials \$
Manitoba					
1939	12	1,897,794	348	382,570	888,010
1943	12	2,038,821	862	1,167,502	1,531,748
Canada					
1939	172	59,490,712	8,479	10,001,539	29,612,215
1943	191	77,846,582	16,955	26,577,908	48,922,922

In 1939 tin plate constituted about 50% of the cost of raw materials used by the industry in Canada, and the value of production of tin cans represented some 44.5% of the total value of production.

The total gross value of production of cans in Canada is shown for the years 1939, 1941 and 1943:

	1939 \$	1941 \$	1943 \$
Packers' Sanitary Tin Cans	14,306,985	21,494,679	13,908,123
Other Metal Cans	8,538,737	13,345,079	8,575,985
Paper & Fibre Cans	355,439	492,032	2,774,410
Total	23,201,161	35,331,790	25,258,518

There are no reliable figures published of the consumption of cans in the Prairie Provinces. The market consists largely of packers' sanitary tin cans. Based on information obtained from responsible sources,

it is estimated that the consumption of packers' cans in the Prairie Provinces in the last two or three years was equivalent to about 5% of that of Canada while, in 1939, it was only equivalent to about 0.6%. The large increase was due to the export demand for canned meats arising from the war and post-war demands.

On the basis of the above estimates, the dollar value of packers' sanitary tin cans used in the Prairie Provinces was about \$86,000 in 1939 and \$695,000 in 1943.

A plant to manufacture the range of packers' tin cans required in Manitoba would cost some \$1,000,000. Construction of such a plant would not appear warranted unless the market can be maintained at or near present levels. Some time will elapse before a reliable estimate of the future market can be made.

The total gross value of production in Canada of main products other than cans is as follows for 1939, 1941 and 1943:

	1939 \$	1941 \$	1943 \$
Steel Barrels & Drums (1)	639,820	1,234,323	1,340,403
Domestic Range Boilers:			
Galvanized	806,686	830,771	666,405
Copper, Everdur & Monel	36,099	41,864	30,330
Household Ice Refrigerators:			
Metal	486,552	758,328	200,238
Wood & Masonite	3,167	4,670	953,216
Enamelled & Aluminium Kitchenware:			
Vitreous Enamelled	1,282,356	1,601,142	1,537,025
Aluminium	1,666,836	1,084,611	283,758
Metal Bottle Caps	3,128,368	4,453,024	5,014,959
Steel Office Furniture (2)	3,187,787	3,183,909	1,369,826
Stove & Furnace Pipe	572,686	872,373	759,979
Galvanized Sheets	5,620,269	6,340,975	3,531,148
Metal Lath	579,134	888,895	151,713
Steel Sash	794,545	1,706,105	723,599
Eave Trough	380,685	513,044	186,064
Sheet Metal Culvert Pipe	1,023,073	906,688	264,329

(1) Does not include barrels and drums made by some companies for their own use.

(2) Includes some masonite cabinets in 1943.

The value of production in Manitoba of the plants classified in the sheet metal products industry is not available. The chief products manufactured in 1943 were as follows:

Tinware	Steel Barrels
Enamelled Cooking & Household Utensils	Humidifiers
Enamelled Sinks	Ventilation Equipment
Chimneys	Elevator Buckets
Stove Pipe	Ice Boxes
Galvanized Iron Tanks	Service Station Equipment
Eave Trough	Store Fittings
Garbage Cans	Fire Escapes
Milk Cans	Kettles & Buckets
Metal Lath & Steel Sash	Lanterns
Sheet Metal (Roofing etc.)	Drainboards
Road Signs	Well Casing
Bee-Keeper Supplies Etc.	Egg Candler

The imports into Canada and exports of various products classified in the sheet metal products industry were as follows in 1939:

	<u>Imports</u>
	\$
Baths & Bathtubs of Iron and Steel	74,365
Basins, Sinks, Laundry Tubs, etc.	85,764
Containers Manufactured from Tin plate	810,136
Hollow-ware of Iron & Steel (mostly enamelled)	262,029
Kitchen & Dairy Hollow-ware of Iron & Steel (tin coated)	54,881
Manufactures of Tin & Tin Plate N.O.P.	<u>516,105</u>
	<u>1,803,270</u>
	<u>Exports</u>
	\$
Enamelware of Iron and Steel	24,951
Tinware	<u>23,190</u>
	<u>48,141</u>

Farm Implements & Farm Machinery

The gross value of production of plants classified under the above industry is shown as follows for Manitoba and Canada for the years 1939 and 1943:

	Manitoba	Canada
	\$	\$
1939	372,773	16,035,223
1943	872,926	56,952,569

For the same years the number of plants, capital invested and other statistics are set out below:

	No. of Plants	Capital Invested \$	Number of Employees	Salaries & Wages \$	Cost of Materials \$
Manitoba					
1939	4	529,655	97	112,708	192,881
1943	6	804,769	184	251,367	419,619
Canada					
1939	36	58,067,218	5,306	6,024,720	6,672,529
1943	37	61,820,335	14,065	24,597,880	25,213,399

Ontario is the centre of the farm implements and machinery industry in Canada. The gross value of production of the plants in Ontario classified under this industry accounted for 95.5% of the Canadian production in '39 and 97.4% in 1943. In 1939 about \$13,600,000 of the \$16,035,223 gross value of Canadian production represented farm implements and equipment. The balance included stoves, washing machines, creamery equipment etc. In 1943 only about \$18,430,000 of the \$56,952,569 production represented farm implements and equipment. War equipment accounted for the balance.

The total value of production in Canada by all industries, imports, exports and apparent consumption of farm implements and parts

are shown in the following table for the years 1939 to 1943:

	Gross Value Production	Imports	Exports	Apparent Consumption
	\$	\$	\$	\$
1939	13,982,000	20,917,000	7,028,000	27,871,000
1940	18,285,000	30,673,000	9,609,000	39,349,000
1941	22,411,000	30,972,000	11,873,000	41,510,000
1942	19,638,000	23,644,000	9,122,000	34,160,000
1943	18,930,000	20,228,000	10,284,000	28,874,000

During the five year period specified above, the exports from Canada were equivalent to about 51% of the Canadian production and the imports represented 73.7% of the apparent consumption.

The sales of farm implements in Canada and the Western Provinces are shown in the following table. The values are based on the distributors' wholesale prices.

	1939		1941		1943	
	\$	% Of Canada	\$	% Of Canada	\$	% Of Canada
Canada	34,060,447	100.0	52,106,069	100.0	29,796,560	100.0
Manitoba	4,773,413	14.0	5,909,118	11.3	3,446,587	11.5
Saskatchewan	8,379,797	24.6	12,923,707	24.8	7,643,580	25.7
Alberta	9,217,459	27.1	10,366,017	19.9	6,357,970	21.3
Prairie) Provinces)	22,370,669	65.7	29,198,842	56.0	17,448,137	58.5
British Columbia	399,749	1.1	1,150,486	2.2	766,292	2.6
Western Canada	22,770,418	66.8	30,349,328	58.2	18,214,429	61.1

The production of various farm implements and machinery in Canada is shown in the following table for 1939 and 1943. The value shown is the selling value at the works.

	1939		1943	
	Number	\$	Number	\$
Grain Binders	9,916	1,995,093	9,465	2,436,114
Threshers & Reaper				
Threshers	3,049	2,647,764	2,244	2,532,930
Seed Drills	5,530	635,795	6,906	1,335,105
Ploughs	37,823	1,532,509	36,415	1,948,793
Mowers	8,242	580,793	5,672	495,496
Harrows	28,755	541,738	11,400	405,298
Discs, Harrow Ploughs) & Tiller Combines)	3,525	642,256	4,696	767,993
Cultivators	5,884	410,226	6,031	275,634
Scufflers	9,656	66,849	4,429	32,738
Weeders	1,535	107,876	450	23,013
Corn Planters	2,298	117,119	1,589	71,389
Hay Loaders	1,298	95,287	1,359	131,759
Manure Spreaders	3,077	324,659	2,025	244,082
Hay Rakes	4,924	185,430	2,720	124,240

The number of tractors, combines, threshing machines, and gasoline engines, according to the 1941 census, on farms in Canada and the Prairie Provinces was as follows:

	<u>Tractors</u>	<u>Combines</u>	<u>Threshing Machines</u>	<u>Gasoline Engines</u>
Canada	158,884	19,067	92,774	166,829
Manitoba	21,949	1,716	10,077	15,774
Saskatchewan	54,014	11,227	21,503	33,570
Alberta	37,100	5,163	12,709	30,461
Prairie Provinces Combined	113,063	18,106	54,289	79,805
Prairie Province - % of Canada	71.1	94.9	58.5	47.8

There is now no duty on farm implements and machinery entering Canada from the United States, nor is there any duty on Canadian farm implements and machinery entering the United States.

A partial classification of imports into the three Prairie Provinces is shown in the following table for 1939, 1941, 1943 and 1945. About 70% of the value of the imports is comprised of traction engines and engine parts. Combines accounted for about 16% in 1943.

IMPORTS OF AGRICULTURAL MACHINERY AND IMPLEMENTS

INTO THE PRAIRIE PROVINCES

	<u>1939</u> \$	<u>1941</u> \$	<u>1943</u> \$	<u>1945</u> \$
Cream Separators, Milking Machines, Dairy Machines and Parts	306,312	269,306	68,102	288,365
Harvesters and Parts	470,967	273,844	270,103	471,941
Combines and Parts	1,220,769	1,994,247	1,585,277	3,906,776
Threshing Machines and Parts	524,768	155,533	179,105	264,455
Cultivators, Scufflers, Harrows and Discs, and Parts	131,362	153,160	61,797	348,525
Ploughs and Parts	435,241	629,357	409,370	722,515
Mowing Machines, Reapers and Parts, Scythes and Sickles	57,050	78,175	46,012	81,300
Hay Tedders, Loaders, Rakes and Parts	22,975	18,886	7,290	48,964
Seed Drills and Parts	165,806	200,841	42,829	152,118
Ensilage Cutters and Parts	12,393	37,687	9,363	24,328
Grain Grinders and Parts	10,775	92,345	25,541	62,510
Fanning Mills, Husking Machines, Grading Machines and Parts	6,116	56,137	28,731	48,924
Hay Presses and Parts	2,294	3,006	2,874	23,835
Rollers, Manure Spreaders and Parts	11,603	22,081	3,302	10,813
Spraying Machines and Parts	19,692	43,865	14,321	38,540
Potato Diggers and Parts	1,515	10,333	3,559	6,864
Forks, Hoes, Spades, Shovels, Post Hole Diggers	23,023	19,686	8,634	19,662
Equipment for Generating Electric Power	96,795	48,327	40,616	513,152
Traction Engines Internal Combustion	6,077,922	8,164,947	3,143,869	10,783,462
Engine Parts and Attachments	1,927,043	2,626,027	3,637,264	6,686,886
Traction Ditching Machines	5,768	26,584	16,543	44,088
Windmills	78,650	61,120	43,898	213,441
All Other Agricultural Implements and Tools	<u>38,856</u>	<u>50,144</u>	<u>17,087</u>	<u>91,983</u>
Engine and Engine Parts - Percentage of Total	<u>\$11,647,695</u>	<u>\$15,035,638</u>	<u>\$9,665,487</u>	<u>\$24,853,447</u>
	68.6	71.7	70.1	70.4
Combines - Percentage of Total	<u>10.4</u>	<u>13.2</u>	<u>16.4</u>	<u>15.7</u>
	79.0	84.9	86.5	86.1

Heavy farm equipment, such as grain binders, mowers, threshers, hay loaders, manure spreaders, tractors etc., is not manufactured in Manitoba. The plants included in the farm implement classification manufacture equipment such as grain cleaners, grain elevators, grain grinders, harrows, sleighs, wagons, parts etc. Other types of equipment included in their production are auto heaters, saw frames, metal stampings, pumps, castings and other miscellaneous items.

With the exception of tractors and combines, the production capacity of Ontario plants is much greater than Canadian requirements. Exclusive of tractors and combines, some 75% of the needs of the Prairie Provinces are supplied mainly from Ontario production. As about 60% of all farm machinery and implements sold in Canada are used in the Prairie Provinces, a local market exists much in excess of Manitoba's manufacturing and assembling facilities.

Aircraft

In 1939, statistics of this industry covered the operations of establishments in Canada which were occupied chiefly in the making of assembling of aircraft, or in manufacturing parts or devices such as pontoons, skis, link trainers etc. In that year two factories were listed in Manitoba, and among their products were pontoons, skis and propellers. The value of production is not available. The total production in Canada in 1939 was \$12,638,470, of which \$9,773,771 were for aircraft and \$2,864,699 for other products already referred to.

The industry was largely expanded by war demands, as is shown by the statistics that follow. All of the makers of aircraft parts are not included, as a large number of concerns, which normally were in other lines of business, were participating in the overall aircraft programme.

In 1944 in Canada, ten assembly plants constituted the core of the industry, and these employed 59,840 workers. Production, including 4,095 complete aircraft, was valued at \$362,265,060.

The principal statistics of the aircraft industry for Manitoba in 1944 and for Canada in 1939 and 1943 are as follows:

	No of Plants	Number of Employees	Salaries & Wages \$	Gross Value of Production \$
Manitoba 1944	4	3,249	5,425,323	9,607,762
Canada 1939	13	3,596	4,651,615	12,638,470
1944	45	79,572	161,055,010	426,981,558

It will be seen that, in Manitoba in 1944, there were almost as many employees in the industry as there were in the entire industry in Canada in 1939. Of the total employees in Manitoba in 1944, 1,114, or one-third, were female.

As certain deductions can be drawn from the record of this rapidly expanded industry in Manitoba, more particularly regarding its ability to obtain skilled help, the figures for several years are given:

Year	No. of Plants	Capital Invested \$	Number of Employees			Salaries & Wages \$	Gross Value of Production \$
			Male	Female	Total		
1940	3	566,999	171	14	185	194,024	265,900
1941	4	2,662,995	682	89	771	1,003,599	1,951,252
1943	4	4,383,631	842	375	1,217	1,873,665	3,295,259
1944	4	Not Available	2,135	1,114	3,249	5,425,323	9,607,762

The industry in Manitoba has now returned to peace-time activities; production of propellers has ceased and production of aircraft parts and accessories has been largely curtailed. The principal plant continues in operation, though on a reduced basis.

The surplus buildings, specially erected during the war period, are in use for other purposes than aircraft equipment production.

Winnipeg's geographical position, its present importance as an air traffic centre, both for through traffic and service to northern areas, together with the experience gained as the result of pioneering work already done and still being conducted by the principal company point to a stabilized peace-time industry with prospects for substantial growth in the future.

Machinery

Products made under this classification include washing machines and ironers, sewing machines, cash registers, typewriters, pulp and paper machinery, elevators, air compressors, mining machinery, road-making machinery, pumps, machine tools, rolling mill machinery etc. Some plants in other industrial groups make machinery as a secondary product. The production, however, from the plants classified under the above industry represented some 95% of the total in 1943. Ontario and Quebec combined accounted for about 95% of the Canadian production in 1939 and 90% in 1943. British Columbia which, by provinces, is the third largest producer, only accounted for 2.6% in 1939 but increased this to 8.4% in 1943. Manitoba's production was about 0.8% and 0.3% respectively.

The gross value of production of plants classified under the machinery industry is shown as follows for Manitoba and Canada for the years 1939 and 1943:

	Manitoba <u>\$</u>	Canada <u>\$</u>
1939	396,364	48,458,408
1943	525,384	152,359,576

The number of plants, capital invested and other statistics are set out below for 1939 and 1943:

	No. of Plants	Capital Invested \$	Number of Employees	Salaries & Wages \$	Cost of Materials \$
Manitoba					
1939	10	542,428	126	160,982	125,481
1943	8	1,132,586	172	306,808	120,373
Canada					
1939	232	69,053,059	12,248	15,847,861	18,099,490
1943	256	123,621,515	28,239	52,818,044	48,685,844

The types of equipment manufactured in Manitoba include air conditioning and ventilating equipment, blowers, fans, driers, laundry and dry cleaning machinery, flour and feed mill machinery, baking machinery, soda fountains, candy making equipment, seed cleaning and other equipment.

Miscellaneous Iron and Steel Products

This industry consists of groups which are not readily classified with any of the special iron and steel groups, and includes production of such products as steel forgings, ornamental iron work, safes, vaults, steel wool, scouring pads, horseshoes, rifles, steel furniture, chains, mining machinery etc.

In 1939, of the 134 plants operating in Canada, 17 were in Western Canada, 4 in Manitoba, one in Alberta and 12 in British Columbia. The production in Manitoba and Alberta amounted to about 11.5% of the Canadian total. Separate figures are not readily available for Manitoba.

In 1943, 161 plants were in operation in Canada, 24 in Western Canada, 17 in British Columbia, 4 in Manitoba, 2 in Alberta and one in Saskatchewan. The value of production in Manitoba in 1943 was equivalent to 0.7% of the Canadian total. Some 90% of the production was munitions.

The chief statistics are shown for Canada for 1939 and 1943 and the Prairie Provinces for 1939 and Manitoba for 1943:

	No. of Plants	Capital Invested \$	Number of Employees	Salaries & Wages \$	Cost of Materials \$	Gross Value of Production \$
Manitoba 1943	4	-	427	736,730	1,095,097	2,551,660
Prairies 1939	5	1,710,627	303	392,144	387,753	954,553
Canada 1939	134	10,044,622	2,102	2,699,665	3,478,629	8,303,386
1943	161	-	48,567	95,810,305	181,658,309	364,698,074

The breakdown of the Canadian value of production is shown for 1939 and 1943. Comparative figures are not available for Manitoba.

	1939 <u>\$</u>	1943 <u>\$</u>
Castings - grey iron	151,362	284,077
Fireplace Furnishings	106,263	53,663
Architectural Bronze Work	102,330	-
Steel Forgings	2,756,658	17,760,408
Metal Furniture	194,070	67,210
Ornamental Ironwork	1,037,807	465,738
Machinery	217,831	4,194,353
Railway Track Equipment	361,605	388,840
Safes, Vaults & Fittings	384,442	990,132
Shoe Shanks	96,598	162,331
Structural Shapes	408,583	633,191
Custom Work	201,076	626,054
Munitions	-	327,533,992
All Other Products	<u>2,284,761</u>	<u>11,902,085</u>
Total	<u>8,303,386</u>	<u>364,698,074</u>

The Manitoba plants manufactured ornamental iron work and shapes, wire screen products, castings, machinery, mining equipment, plate work, structural steel etc.

Iron Castings

This industry covers the operations of iron and steel works which are occupied chiefly in making commercial iron castings or iron and steel pipe and tubing. It does not include the foundries operated by machinery or stove firms making castings for their own use.

There were four firms in Manitoba included in this classification in 1939 and 1943 with a gross value of production of \$977,966 and \$2,001,293 respectively. Ontario and Quebec combined accounted for a very large percentage of the total Canadian production - in excess of 86%.

The gross value of production for Manitoba, the Prairie Provinces and Canada is shown for 1939 and 1943:

	Manitoba <u>\$</u>	Prairie Provinces <u>\$</u>	Canada <u>\$</u>
1939	977,966	1,509,388	32,345,831
1943	2,001,295	4,686,712	75,479,138

The number of plants, capital invested and other statistics are shown in the following table for Manitoba and Canada for the years 1939 and 1943:

	No. of Plants	Capital Invested \$	Number of Employees	Salaries & Wages \$	Cost of Materials \$
Manitoba					
1939	4	1,610,613	311	376,696	322,108
1943	4	2,714,789	633	1,088,527	385,276
Canada					
1939	194	43,218,451	9,635	11,190,871	12,273,647
1943	198	60,193,907	15,916	28,727,856	26,677,705

The classification of the production is available for Canada but not for Manitoba. The types of products produced by the four firms classified under the iron casting industry are as follows: various types of iron castings, iron soil pipe and fittings, mining equipment, steel and cast iron furnaces, steel castings, steam boilers, steel tanks, hydrants, stokers, elevator machinery, ball mill liners etc. In addition to the above four firms, five other firms in Manitoba produce iron castings classified under other branches of the iron and steel industry.

Manitoba's capacity for the production of iron castings appears adequate.

The total Canadian production for 1939 of various products produced is shown in the following table:

	<u>Tons</u>	<u>\$ Value</u>
Grey Iron Castings	104,305	8,787,042
Malleable Iron Castings	15,786	2,345,010
Cast Iron Soil Pipe & Fittings	16,462	1,124,116
Cast Iron Water Pipe & Fittings	33,082	1,752,912
Cast Iron Pipe Fittings, except those used for water mains	5,616	780,927
Malleable Iron Pipe Fittings, all kinds	4,668	1,500,850
Wrought Iron Pipe and Fittings	1,599	264,596
Steel Pipe, all sizes, Buttweld & Lapweld	79,326	6,352,157
Steel Pipe, welded and rivetted	8,812	1,092,885
Steel Culvert Pipe	-	1,023,073
Steel Pipe Fittings, all kinds	2,378	686,771
Steel Tubing, Seamless Boiler Tubes etc.	-	1,565,307

Boilers, Tank and Plate Work

There were two plants in Manitoba in 1939 specializing in this industry and one in 1943, the classification of one being changed owing to other types of production predominating. Steam and hot water boilers, tank and miscellaneous plate were fabricated.

The chief statistics for Canada follow for 1939 and 1943. Those for Manitoba are not available. The greater part of the industry is located in Eastern Canada.

	No. of Plants	Capital Invested \$	Number of Employees	Salaries & Wages \$	Cost of Materials \$	Gross Selling Value \$
1939	41	14,324,828	2,491	3,150,560	3,673,208	8,799,806
1943	38	25,122,738	5,469	11,086,571	16,270,970	37,365,932

The production value of boilers and heating radiators is shown for Canada for the years 1939 and 1943:

	1939		1943	
	No.	\$	No.	\$
Heating Boilers	14,871	1,259,957	10,979	2,144,932
Power Boilers	350	544,935	747	14,451,323
Other	-	151,531	-	920,086
		1,956,423		17,516,341
Heating Radiators		1,462,624		2,252,308

Bridge Building and Structural Steel Work

This industry includes all firms which are mainly engaged in fabricating or erecting steel for bridges, buildings, transmission lines etc.

There are two plants in Manitoba, one in Alberta and two in British Columbia. These five plants in Western Canada accounted for 19.7% of the Canadian production in 1939 and 24.4% in 1943. About 50% of the production in 1943 was for war contracts. The value of production in

Manitoba is not available.

The gross value of production is shown for Eastern and Western Canada for the years 1939 and 1943:

	Eastern Canada \$	Western Canada \$	Canada \$
1939	12,713,282	3,127,310	15,840,592
1943	54,778,062	17,737,772	72,515,834

Other pertinent statistics for the same two years are shown for Western Canada and Canada:

	No. of Plants	Capital Invested \$	Number of Employees	Salaries & Wages \$	Cost of Materials \$
Western Canada					
1939	5	3,909,582	410	675,894	1,250,045
1943	5	7,936,809	2,606	5,478,856	5,397,273
Canada					
1939	21	19,246,277	2,949	4,546,648	6,786,893
1943	22	39,458,775	10,974	23,175,872	24,014,652

The Canadian production of the plants classified under the bridge building and structural steel work industry is shown for the years 1939 and 1943 in the following table:

	1939		1943	
	Tons	\$	Tons	\$
Bridges	3,783	839,412	1,832	330,402
Buildings, Transmission Towers, etc.	60,512	7,826,660	95,599	16,061,948
Plate & Tank Work	-	2,183,279	-	15,812,030
Mechanical Work(Cranes, Trolleys etc.)	-	1,212,762	-	3,818,832
Sales of Plain Material	32,394	2,731,254	55,698	5,534,332
Custom Work and Repairs	-	162,509	-	363,591
Other Products	-	884,816	-	x 30,594,699
		<u>15,840,592</u>		<u>72,515,834</u>

x Chiefly war contracts.

Automobile Manufacturing & Automobile Parts

There are no automobile manufacturing or assembling plants in Manitoba. There are, however, eight plants specializing in the production of metal automobile parts, chiefly auto truck and bus bodies, axles, springs, radiators, defrosters etc.

Statistics relative to the manufacturing and parts industries follow. While there seems little possibility of establishment of an automobile manufacturing industry, a steady expansion in the automotive parts industry over 1939 production appears probable.

Automobile Manufacturing

In 1939 there were twelve plants, including branch assembly plants, manufacturing automobiles in Canada. During 1941 the branch assembly plants were closed. In 1943 there were five plants in operation producing military and commercial vehicles only. Four plants were located in Ontario and one in British Columbia.

The principal statistics of the industry are shown for the years 1939 and 1943:

	No. of Plants	Capital Invested \$	Number of Employees	Salaries & Wages \$	Cost of Materials \$	Gross Value of Production \$
1939	12	59,470,986	14,427	20,573,714	71,671,753	107,463,351
1943	5	139,610,450	24,265	57,569,265	248,652,602	352,229,955

As production during the war years has little bearing on peace-time production, the breakdown of production is not shown for 1943.

Production of passenger cars was stopped at the end of June 1942.

The number and selling value at works of automobiles and parts produced in Canada for sale in Canada and for export are shown for 1939:

	<u>Number</u>	<u>\$</u>
<u>Produced for Sale in Canada</u>		
Passenger Cars	75,145	57,586,959
Commercial Cars(cars, trucks, buses)	24,058	17,589,547
Total Cars	99,203	75,176,506
Parts, Accessories etc.	-	6,120,450
Total Value		<u>81,296,956</u>

	<u>Number</u>	<u>\$</u>
<u>Produced for Export</u>		
Passenger Cars	33,224	13,514,245
Commercial Cars	22,999	10,483,165
Total Cars	56,223	23,997,410
Parts, Accessories, etc.		2,168,985
Total Value		26,166,395
Grand Total of Cars	155,426	99,173,916
Grand Total of Parts		8,289,435
Grand Total of Cars and Parts		107,463,351

The production of all automobiles and accessories in Canada, imports, exports and re-exports and apparent consumption are shown for 1939:

<u>Automobiles</u>	<u>Number</u>	<u>\$</u>
Production	155,426	99,173,916
Imports	18,284	15,673,770
Exports & Re-exports	56,443	22,663,053
Apparent Consumption	117,267	92,184,633
<u>Parts & Accessories</u>		
Production		8,289,435
Imports		x 25,308,352
Exports & Re-exports		3,349,673
Apparent Consumption		30,248,114

x Does not include automobile engines.

The number of passenger and commercial automobiles produced for sale in Canada is shown for the years 1938-1943:

	<u>Passenger</u>	<u>Commercial</u>
1938	85,888	23,240
1939	75,145	24,058
1940	94,633	53,169
1941	81,943	76,627
1942	8,596	93,903
1943	-	79,290

The imports and re-exports of imported cars were as follows for 1938-1943:

	<u>Passenger</u>		<u>Commercial</u>	
	<u>Imports</u>	<u>Re-exports</u>	<u>Imports</u>	<u>Re-exports</u>
1938	13,445	131	1,709	11
1939	16,585	207	1,699	13
1940	15,386	145	1,633	10
1941	2,672	26	1,038	-
1942	327	9	718	2
1943	21	1	795	163

The apparent consumption in Canada of passenger and commercial automobiles was as follows for 1938-1943:

	<u>Passenger</u>	<u>Commercial</u>
1938	99,202	24,938
1939	91,523	25,744
1940	109,874	54,792
1941	84,589	77,663
1942	8,914	94,619
1943	20	79,922

Estimates of the number of passenger cars and commercial and military automobiles withdrawn from use are shown for 1938-1943:

	<u>Passenger</u>	<u>Commercial & Military</u>
1938	42,610	7,350
1939	61,106	12,018
1940	65,258	28,881
1941	39,690	51,705
1942	71,500	82,005
1943	23,143	69,775

The registration of motor vehicles in Canada and the Prairie Provinces is shown for 1939:

	<u>Number of Passenger Cars</u>	<u>All Other</u>	<u>Total</u>
Canada	1,190,021	249,224	1,439,245
Manitoba	70,506	18,358	88,864
Saskatchewan	89,471	29,547	119,018
Alberta	88,516	25,186	113,702
Prairie Provinces	248,493	73,091	321,584
Percent of Canada	20.8	29.2	22.3

The total registration of motor vehicles is shown for the Prairie Provinces and Canada for 1943:

	<u>Number</u>
Canada	1,511,845
Manitoba	93,494
Saskatchewan	133,839
Alberta	127,559
Prairie Provinces	355,092
Percent of Canada	23.5

Automobile Parts

The industry is centred in the Province of Ontario, which accounted for 98% of the production in 1939 and 97% in 1944. The corresponding percentages for Manitoba were 0.4 and 1.7 respectively.

The principal statistics for Manitoba and Canada for the years 1939 and 1944 are as follows:

	No. of Plants	Capital Invested \$	Number of Employees	Salaries & Wages \$	Gross Value of Production \$
Manitoba					
1939	7	192,352	83	82,719	171,824
1944	8	-	413	589,128	2,747,402
Canada					
1939	97	30,290,876	8,119	9,846,641	38,711,807
1944	104	-	20,366	38,671,730	160,195,390

During the war the industry was also engaged in the production of aircraft parts and military supplies, which accounted for a substantial portion of the increased output in 1944 .

Hardware, Tools & Cutlery

This industry is mainly centred in Ontario and Quebec. These two provinces in 1939 and 1943 accounted for about 97% of the Canadian production. In 1939 there were two manufacturers in Manitoba in this classification. In 1943 there were four firms with a production of \$304,110 - about 0.3% of the Canadian production of \$91,296,033. There were no manufacturers in the industry in Saskatchewan and Alberta.

The chief statistics of the industry for Manitoba in 1943 and for Canada in 1939 and 1943 are shown as follows:

	No. of Plants	Capital Invested \$	Number of Employees	Salaries & Wages \$	Cost of Materials \$	Gross Value of Production \$
Manitoba 1943	4	251,715	87	93,248	54,181	304,110
Canada 1939	154	30,854,045	6,756	7,590,826	7,385,636	22,995,424
1943	241	62,873,901	19,228	33,222,087	24,233,712	91,296,033

The total value of production in Canada from all industries of hardware, tools, cutlery is shown for the years 1939 and 1943:

	1939 \$ Selling Value at Factory	1943 \$
Hardware:		
Builders' and Shelf	2,541,922	3,809,587
Harness and Saddlery	344,265	492,759
Pole line(except insulators)	807,046	1,102,705
Automobile	861,400	448,321
Furniture & Cabinet	376,098	246,456
Trunk and Suitcase	56,553	87,257
All Other	542,926	1,618,431
Bolts, Nuts & Rivets	4,387,816	12,373,152
Screws & Screw Machine Products	2,634,663	8,868,000
Axes and Hatchets	363,489	650,619
Saws and Parts	1,586,062	x 3,019,268
Forks	338,341	x 470,982
Rakes	56,028	x 86,879
Hoes	105,151	x 136,681
Peavies	93,927	x 181,967
Spades & Shovels	557,506	x 756,854
Wire Staples	203,735	x 216,157
Wire Nails & Spikes	5,460,134	x 5,965,727
Wire & Cut Tacks	367,357	x 478,456
Cut Nails	189,320	x 168,245
Small Tools:		
Carpenters' and Mechanics'	1,859,706	4,025,882
Machine Knives	312,595	429,656
Drills, Taps, Bits, Reamers, Punches & Dies(including screw plates)	1,334,351	6,952,655
Milling Cutters	Included in "Other Tools"	2,110,015
Gauges	" " " "	3,190,947
Other Tools, Jigs & Fixtures	992,523	22,137,758
Cutlery(exclusive of razors & razor blades)	836,247	1,163,506
Ice Skates	693,275	x 91,685

x Factory Sales

The value of imports into Canada and exports for 1939 is shown in the following table:

	Imports \$
Steel Knives, Forks & Spoons	379,766
Pen and Pocket Knives	142,847
Razors & Razor Blades	306,336
Scissors & Shears	176,419
Nails and Tacks	44,172
Needles & Pins	424,310
Hinges & Butts (iron & steel)	105,903
Nuts, Bolts and Screws	376,888
Builders; Cabinet Makers', Upholsters' and Carriage Hardware	171,744
Locks	87,727
Skates	68,631
Railway Spikes	4,317
Fish Hooks	40,136
	Exports \$
Cutlery	2,979
Razors & Razor Blades	234,687
Nails, Spikes & Tacks	768,464
Needles	795,217
Bolts, Nuts and Screws	400,537
Skates	449,365
Hardware	183,078

A breakdown of the production is not available for Manitoba.

In 1943 the products manufactured were as follows:

Hardware specialties
Metalware
Punches and Chisels
Crowbars
Bolts, Nuts and Rivets
Wrenches

Bolts, nuts, rivets and wrenches were also produced by firms other than the four classified under the Hardware, Tools & Cutlery Industry.

Cooking and Heating Apparatus

In 1939 and 1943 there was only one plant in Manitoba classified in the above industry, its main production being automatic stokers. Stokers and furnaces, camp stoves, stove pipes and some other miscellaneous parts were manufactured by several other firms. Stoves, other than camp stoves, are not manufactured in Manitoba.

The chief statistics of the industry are shown for the Prairie Provinces and Canada for 1939 and 1943. Those for Manitoba are not available.

	No. of Plants	Capital Invested \$	Number of Employees	Salaries & Wages \$	Cost of Materials \$	Gross Value of Production \$
Prairie Provinces						
1939	4	64,295	18	14,780	25,547	41,865
1943	4	104,472	39	60,723	59,071	146,932
Canada						
1939	72	17,010,431	5,029	5,753,888	5,659,694	15,351,663
1943	72	20,176,358	6,326	10,119,094	10,382,209	26,745,874

On the following page will be found the number and factory selling value of stoves made in Canada by all industries for Western Canada and Canada for the years 1939 and 1943.

		Western Canada		Canada	
		No.	Selling Value At Factory	No.	Selling Value At Factory
			\$		\$
Cooking Stoves and Ranges(coal & wood)	1939	3,030	89,809	89,835	4,283,359
	1943	3,062	130,908	98,154	4,890,260
Heating Stoves (coal & wood)	1939	33,960	95,138	102,126	968,106
	1943	31,962	164,020	113,276	1,119,701
Combination Stoves (gas & coal)	1939	-	-	10,178	765,312
	1943	-	-	8,820	661,680
Combination Stoves (coal & electric)	1939	-	-	2,164	192,571
	1943	-	-	379	41,985
Cooking Stoves and Ranges(gas)	1939	5	1,242	25,292	1,102,172
	1943	4	1,570	17,913	887,600
Cooking Stoves & Ranges (electric over 35 amps)	1939	-	-	33,227	2,504,570
	1943	-	-	5,220	484,228
Ranges (electric with cord)	1939	-	-	13,725	232,982
	1943	-	-	4,345	105,427
Cooking Plates and Grills(electric)	1939	-	-	77,441	158,759
	1943	-	-	-	137,408
Cooking Plates(gas)	1939	267	2,253	3,227	13,801
	1943	18	520	1,153	4,325
Heating Stoves(gas)	1939	-	-	2,472	47,530
	1943	1,065	12,455	4,111	76,509
Stoves (oil & gas)	1939	-	-	44,283	264,073
	1943	-	-	34,754	140,430
Total	1939		188,442		10,533,235
	1943		309,473		8,629,553

Total production in Canada of other heating equipment in

1939 and 1943 was as follows:

	1939		1943	
	<u>No.</u>	<u>\$</u>	<u>No.</u>	<u>\$</u>
Domestic Water Heaters:				
Cast Iron for Coal,				
Wood, or Iron	6,898	56,947	20,755	235,457
Gas, Automatic	4,064	190,889	1,286	57,216
Gas, Non-automatic	8,724	59,589	8,933	63,073
Electric-Circulating type	4,370	53,493	3,074	31,253
Electric-Immersion	16,913	59,379	8,261	33,755
Electric-Storage Tank	1,689	14,461	200	15,548
Total	42,658	434,758	42,509	436,302
Power Type Oil Burners	1,842	210,768	129	64,263
Furnace Blowers	1,111	51,254	1,990	37,263
Mechanical Stokers	-	943,992	-	1,951,699
Unit Heaters	-	388,928	-	1,622,972
Air Registers & Grills	-	239,146	-	232,320
Heating Radiators (sq.ft)	5,608,166	1,462,624	7,116,889	2,252,308
Warm Air Furnaces	25,118	1,697,229	23,495	2,056,757
Heating & Power Boilers	-	1,956,423	-	17,516,341

Wire & Wire Goods

There is one firm in Manitoba producing wire goods, forms and shapes. The value of production is not available but it is comparatively small. Production of wire and wire goods is mainly in Eastern Canada, with Ontario having in excess of 50% of the Canadian production.

The principal statistics for Canada are shown for the years

1939 and 1943:

	<u>No. of Plants</u>	<u>Capital Invested \$</u>	<u>Number of Employees</u>	<u>Salaries & Wages \$</u>	<u>Cost of Materials \$</u>	<u>Gross Value of Production \$</u>
1939	76	31,088,655	4,523	5,684,938	7,262,999	25,063,379
1943	80	36,044,940	6,674	10,993,311	12,717,237	41,117,308

Dollar sales in Canada of products by groups are shown for the years 1939 and 1943:

	<u>1939 \$</u>	<u>1943 \$</u>
Wires, all kinds	7,456,020	9,471,041
Nails and Staples	6,276,605	7,021,015
Wire Fencing & Wire Netting	2,341,618	3,146,952
Wire Goods (Cable, Springs, etc)	6,291,573	14,930,715
Other Goods (Bolts, Nuts, Perforated Metals, etc.)	2,636,801	6,547,585

Imports of wire and wire goods in 1939 were \$2,875,610 and exports were \$3,453,485.

NON-METALLIC MINERAL PRODUCTS INDUSTRIES

Petroleum Products

Clay Products

Brick and Tile

Products Other Than Brick and Tile

Cement

Gypsum Products

Line

Salt

Glass and Glass Products

Monumental and Ornamental Stone Products

Miscellaneous Products

Rock Wool

Artificial Abrasives and Abrasive Products

Petroleum Products

Manitoba has four refineries with a capacity of 4,150 barrels per day. Three of these are located in the Greater Winnipeg area and one in Brandon. In 1939 there were five refineries with a capacity of 2,550 barrels per day. Statistics of the industry for 1939 and 1943 for Manitoba and Canada follow:

	Number of Plants	Capital Invested \$	Number of Employees	Salaries and Wages \$	Cost of Materials \$	Gross Value of Production \$
Manitoba						
1939	5	1,231,709	134	151,271	1,453,756	1,884,891
1943	4	2,320,901	191	292,979	2,655,016	3,376,004
Canada						
1939	53	66,381,189	4,766	7,890,247	74,465,600	104,578,517
1943	52	90,196,659	6,085	12,748,732	138,159,884	187,106,054

Crude petroleum supplies for Manitoba are normally shipped via the St. Lawrence Waterways to Fort William and thence by rail to Winnipeg, or obtained from Alberta sources. In 1939 and 1943 about 16 - 17% of the requirements of crude oil were obtained from Alberta.

Net production of saleable petroleum products in Canada and Manitoba is shown for some selected years:

	Manitoba			Canada		
	Barrels (35 Imperial Gals.)			Barrels		
	1941	1943	1945	1941	1943	1945
Aviation Gasoline	-	13,636	26,779	1,882,069	3,616,166	796,528
Other Gas.	361,604	410,004	533,577	25,023,854	22,763,643	28,947,949
Tractor Distillate	101,479	135,890	125,957	1,083,004	1,095,981	1,104,134
Kerosene	7,717	12,718	13,742	862,095	884,077	999,464
Light Fuel Oils	73,593	72,023	99,412	6,695,038	7,463,134	7,780,569
Heavy Fuel Oils	103,364	120,647	123,847	15,348,835	15,317,475	15,682,903
	647,757	764,918	923,314	50,894,895	51,140,476	55,311,547
Lubricating Oils	Not Made			1,020,060	1,175,634	1,453,774
Asphalt	" "			2,083,538	1,303,333	2,034,812
Coke	" "			393,203	428,578	286,228
Grease	" "			51,897	70,725	68,507
Wax & Candles	" "			28,957	47,024	53,623
Total				54,472,550	54,165,770	59,208,491
Polymer Feed Stocks						675,308
						59,883,799

The estimated domestic consumption of some petroleum products in Manitoba is shown for some selected years.

	<u>1941</u>	<u>1943</u> <u>Barrels</u>	<u>1945</u>
Aviation Gasoline	229,020	590,689	185,090
Other Gasoline	1,346,633	1,294,922	1,674,715
Tractor Distillate	394,235	457,092	429,615
Kerosene	62,716	61,999	63,194
Light Fuel Oils	167,738	186,022	184,697
Heavy Fuel Oils	98,960	126,288	115,460

Percentage of Production in Manitoba to Consumption

Aviation Gasoline	-	2.3	14.4
Other Gasoline	25.4	31.6	31.8
Tractor Distillate	25.8	29.7	29.3
Kerosene	12.3	20.6	21.7
Light Fuel Oils	43.8	38.7	54.0
Heavy Fuel Oils	104.4	95.5	107.2

Clay Products

Brick and Tile

The history of the brick and tile industry is not a happy one. There are at present in excess of thirty abandoned plants in Manitoba and of the eight plants operating in 1931 only three are now active. This condition is due largely to the decrease in demand for brick. In general the production of brick reached its peak just prior to the first world war. Since that time there has been a gradual substitution of steel and reinforced concrete for brick. To illustrate this fact the Canadian production of brick in 1929 was only about half of that in 1912 although the amount of construction in 1929 was greater than that of 1912.

Aside from the decrease in the brick demand, however, a number of plants were unsuccessful owing to a combination of the following reasons - inexperience, unsatisfactory clay, unfortunate

choice of site especially in relation to markets, poor organization and equipment and failure to evaluate the competitive situation.

At the present time the only manufacturer is the Alsip Brick Tile and Lumber Company operating three plants, one at Winnipeg, one at Whitemouth and one at Portage la Prairie. The plant at Winnipeg is equipped for the production of clay brick by the soft and stiff mud processes, drain tile and hollow blocks or brick by the stiff mud process, and sand lime brick. Local clay is used for the soft mud process and a mixture of Sydney and local clay for the stiff mud process. For the sand lime brick Moosehorn lime and Beausejour sand is used. At Whitemouth and Portage la Prairie, local clays are used in the soft mud process.

The following tables show the production of brick and tile in Manitoba and for Canada. The brick production in thousands (M) per capita in 1941 was .006 for Manitoba, .008 for the Prairie Provinces, .023 for Ontario and, .018 for Canada. For further comparison the ^{per} capita production in Manitoba in 1929 was .025 and in Canada .046. In 1941 the quantity of brick produced in Manitoba was equivalent to 2.2% of the Canadian and 22.2% of the Prairie Provinces' production. The percentages are now lower.

Production of Brick and Tile in Manitoba

	<u>Soft Mud Process</u>		<u>Stiff Mud Process</u>		<u>Drain Tile</u>		<u>Hollow Block or Tile</u>	
	<u>(a) Common and Face</u>		<u>(b) Face and Common</u>					
	<u>M</u>	<u>\$</u>	<u>M</u>	<u>\$</u>	<u>M</u>	<u>\$</u>	<u>Tons</u>	<u>\$</u>
1929	14,409	234,481	3,040	70,940	392	15,565	2,785	41,254
1930	9,720	156,585	1,204	26,604	310	15,024	1,335	17,754
1933	1,091	16,035	100	2,043	45	2,716	44	532
1936	1,973	40,958	283	7,012	64	3,691	377	3,908
1938	4,395	64,514	1,751	30,676	80	4,196	574	5,948
1939	3,716	57,152	383	12,291	76	3,690	551	5,258
1940	4,636	70,474	945	15,949	69	4,025	1,170	10,435
1941	4,168	67,249	518	12,011	-	-	400	4,277
1942	698	10,742	1,884	31,348	-	-	-	-
1943	1,546	21,954	(total for both processes)		-	-	-	-
1944	516	8,115	1,050	29,000	-	-	-	-

(a) Largely common brick.

(b) Largely face brick

Production of Building Brick in Canada and Some Provinces, 1941 - 1943

	<u>1941</u>		<u>1942</u>		<u>1943</u>	
	<u>M</u>	<u>\$</u>	<u>M</u>	<u>\$</u>	<u>M</u>	<u>\$</u>
Canada	208,871	3,765,493	169,317	3,018,375	138,678	2,808,764
Manitoba	4,686	79,260	2,753	42,090	1,546	21,954
Saskatchewan	921	10,864	494	6,494	296	5,358
Alberta	15,441	152,827	13,991	145,379	12,026	130,534
Ontario	88,484	1,786,717	69,960	1,359,857	56,389	1,381,796
British Columbia	8,018	147,186	6,153	121,328	2,726	62,430

The brick and tile industry in Manitoba is a relatively small employer of labour as indicated by the following table. The figures include the production of bentonite.

	<u>Number of Firms</u>	<u>Capital Employed \$</u>	<u>Number of Employees</u>	<u>Salaries and Wages Paid \$</u>
1939	5	265,876	63	46,780
1940	5	257,954	68	56,382
1941	4	214,994	61	51,894
1942	4	155,708	55	60,261
1943	3	91,600	67	80,103

Sand lime bricks in years past were produced in relatively large quantities in Manitoba. No production was reported during the five year period 1935 - 1939. Production figures for 1939 - 1944 are not available. In 1945 it is estimated that production in Manitoba amounted to some 1,500 M. While ample supplies of raw materials are available, sand lime brick has a limited market.

The production in Canada (Ontario and Quebec) was 11,805 M in 1939 and 9,088 M in 1943.

Capacity of Brick and Tile Plants in Manitoba

The combined capacity of the three brick and tile plants which are operated by the Alsip Brick Tile and Lumber Company is as follows:

Common Clay Brick	7,000 M per year
Red Face and Hollow Brick	5,000 M " "
Sand Lime Brick	4,000 M " "
Drain Tile	Not obtained.

A modern plant with an annual rated capacity in the order of 18,000 M common brick is under construction in the Greater Winnipeg district. Soft mud process is to be used and local clay utilized. The manufacture of face and hollow brick and drain tile is also planned by the same manufacturer.

Consideration is also being given to reopening a plant at Edrans which has not been operated for a number of years. The capacity of the plant is about 5,000 M bricks per year.

Market and Competitive Situation

The present demand for building brick is much greater than normal due to conditions arising out of the war. It is difficult to determine the market in Manitoba as information

relative to the quantity of imported brick is not available. Estimates in the industry vary from 8,000 M to 12,000 M per year.

The average per capita production of building brick in Canada during the period 1937 - 1941 varied from 0.013 M to 0.018 M, with production in balance with consumption. On the basis of 0.013 M per capita the brick consumption in Manitoba would approximate 10,500 M and of 0.018 M, 13,150 M. annually.

It seems evident, therefore, that the present and planned capacity will exceed the market. Severe competition may also be expected, especially in Western Manitoba, from production in Saskatchewan and Alberta. In Alberta, manufacturers have the advantage of low cost natural gas as a fuel. A brick plant operating at the head of the Lakes will be competitive with the Ontario market adjacent to Manitoba.

Information is lacking as to the market for ordinary small sized drain tile in Manitoba. There has been no production since 1941 but as previously noted production is to be resumed. Some 2,600 tons of sewer pipe and drain tile were imported into the province in 1942 and 2,000 tons in 1943. It does not seem unreasonable to assume a market in excess of the 60 - 80 M tile produced annually pre-war.

Clay Products Other than Brick and Tile

As previously noted attempts have been made in the past to manufacture stoneware, pottery, porcelain, sewer pipe, etc. from Manitoba clays or shales. These have failed largely due to unsatisfactory raw materials, inexperience or high cost of production.

The manufacture of these products does not appear attractive owing to the limited market and competition from Alberta and Saskatchewan which have natural advantages. The former has cheap fuel gas and the latter a wide variety of clays and cheap lignite fuel.

The value of production of clay products from domestic clays other than clay building brick, is shown for Canada, Manitoba and some other provinces for the years 1939, 1941 and 1943.

	<u>1939</u>		<u>1941</u>		<u>1943</u>
	<u>\$</u>		<u>\$</u>		<u>\$</u>
Canada	2,474,602		3,809,843		3,799,429
Manitoba (a)	9,539	(a)	5,557	(b)	110,248
Saskatchewan	132,141		214,013		343,367
Alberta	336,721		799,317		848,115
Ontario	1,075,660		1,300,899		1,072,033
British Columbia	263,442		411,240		432,733

(a) Tile and Bentonite
(b) Bentonite

In addition to products made from domestic clays, a number of plants in Ontario, Quebec and British Columbia produce clay products using imported clays as their main raw material. Such products are high tension porcelain insulators, high temperature cements, stove linings, floor and wall tile, china tableware, etc. The total Canadian production in 1939 and 1943 amounted to \$2,971,979 and \$4,385,416 respectively.

The principal statistics for Canada of the domestic clay and imported clay products industries for 1939 and 1943 follow:

* Domestic Clay Products Industry

<u>Year</u>	<u>Number of Plants</u>	<u>Capital Invested \$</u>	<u>Number of Employees</u>	<u>Salaries and Wages \$</u>	<u>Gross Value of Production \$</u>
1939	149	17,940,742	2,165	2,161,688	5,151,236
1943	105	17,162,747	2,173	2,909,841	6,608,193

* Includes production of building brick and tile.

Imported Clay Products Industry

<u>Year</u>	<u>Number of Plants</u>	<u>Capital Invested \$</u>	<u>Number of Employees</u>	<u>Salaries and Wages \$</u>	<u>Gross Value of Production \$</u>
1939	20	4,661,821	1,097	1,150,712	2,971,979
1943	24	5,542,318	1,117	1,768,361	4,385,416

Cement

Materials for the manufacture of portland cement are abundant in Manitoba. Limestone and argillaceous materials are found over a wide area in Southern Manitoba. In addition there are calcareous shales in the Niobrara beds of the western escarpment which may be classified as natural cement rock.

Between the years 1907 to 1924 the Commercial Cement Company operated a plant near Roseisle, producing natural cement from shales. The capacity of the plant was 250 bbls. per day. Owing to the lack of uniformity in the product this natural cement has been replaced by portland cement.

In 1911 the Canada Cement Company constructed a storage for portland cement klinker and a grinding mill at Tuxedo (now Fort Whyte) near Winnipeg. For two years the klinker was imported from Point Anne, Ontario. In 1913 a plant was completed to produce cement from Manitoba raw materials and now has a daily capacity of about 4,000 bbls. The essential raw materials are limestone, clay and gypsum.

The limestone obtained from the Company's quarry at Steep Rock, is a low magnesium limestone. Clay is obtained from a deposit about a mile west of the mill. The gypsum is obtained from Gypsumville and Amaranth. The supply of these materials is abundant.

The mixture of rock and clay used is approximately two to one with about 2% raw gypsum.

This plant, which is the only plant west of Ontario and east of Alberta, supplies the market from Dryden, Ontario, to Western Saskatchewan. The market for cement is largely dependent upon the construction industry. As materials and labour become available to this industry there should be an increase in demand for portland cement. It is anticipated that the plant will run at full capacity during 1947.

The following table for some specific years shows the production of portland cement in Manitoba and in Canada and reflects the fluctuations in the construction industry. About 70 - 80% of the production in Canada is produced in Quebec and Ontario.

Production of Portland Cement

Year	<u>Manitoba</u>		<u>Canada</u>	
	<u>Barrels</u>	<u>Value \$</u>	<u>Barrels</u>	<u>Value \$</u>
1918	500,302	1,283,948	3,591,481	7,076,503
1924	286,948	746,750	7,498,624	13,398,411
1926	612,155	1,572,401	8,707,021	13,013,283
1928	693,450	1,685,084	11,023,928	16,739,163
1929	1,000,258	2,350,606	12,284,081	19,337,235
1930	977,906	2,268,742	11,032,538	17,713,067
1932	242,112	549,594	4,498,721	6,930,721
1933	129,540	295,351	3,007,432	4,536,935
1936	348,042	783,095	4,508,718	6,908,192
1939	343,717	773,363	5,731,264	8,511,211
1940	572,408	1,287,918	7,559,648	11,775,345
1941	576,648	1,274,392	8,368,711	13,063,588
1942	654,855	1,374,498	9,126,041	14,365,237
1943	793,913	1,503,416	7,302,289	11,599,033
1944	865,756	1,698,567		

Average Selling Prices per Barrel
F.O.B. Plant

<u>Year</u>	<u>Quebec</u> \$	<u>Ontario</u> \$	<u>Manitoba</u> \$	<u>Alberta</u> \$	<u>British Columbia</u> \$
1937	1.37	1.38	2.27	1.99	1.81
1938	1.35	1.40	2.28	2.01	1.87
1939	1.35	1.43	2.25	1.97	1.91
1940	1.41	1.49	2.23	2.01	1.94
1941	1.43	1.46	2.21	2.00	1.97
1942	1.46	1.43	2.10	1.96	2.07
1943	1.44	1.46	1.89	1.94	2.14
1944	1.46	1.46	1.96	1.96	2.12

There are eight cement plants in Canada, two in Quebec, three in Ontario and one each in Manitoba, Alberta and British Columbia. The capital employed, number of employees, and salaries and wages were as follows for 1939 and 1941:

	<u>Capital Employed</u> \$	<u>Number of Employees</u>	<u>Salaries and Wages</u> \$
1939	51,251,358	1,001	1,297,542
1941	51,108,294	1,235	1,860,931

Cement Products

In Canada there were 122 plants in operation in 1941, 98 in Ontario and Quebec, 9 in British Columbia, 6 in Alberta, 4 in Saskatchewan, 2 in Manitoba and 3 in the Maritimes. Ontario and Quebec accounted for 89% of the total Canadian production. Manitoba's production is not available but it is estimated at less than 1%.

The principal statistics for Canada for the years 1939 and 1941 follow:

	<u>Capital Employed</u> \$	<u>Number of Employees</u>	<u>Salaries and Wages</u> \$	<u>Value of Production</u> \$
1939	3,731,652	951	961,143	3,716,692
1941	4,148,169	1,222	1,497,120	6,070,677

The output of the principal cement products in Canada was as follows for 1939 - 1941:

	Cement Hollow Building Blocks \$	Cement Sewer Pipe, Water Pipe, Drain Pipe & Culvert Tile \$	Cement Bricks \$	Artificial Stone \$	Cinder Block \$
1939	653,185	481,095	76,186	149,644	240,012
1940	934,702	791,371	52,616	155,500	275,169
1941	857,440	781,661	187,874	148,413	367,511

Gypsum Products

There are two plants producing gypsum products in Manitoba, as previously noted under the mining section, Volume III, page 32.

The use of gypsum products, due to their lightness, durability, fire-resisting and acoustic properties, has made rapid progress in Manitoba and elsewhere. The Prairie market in 1939 for gypsum lath was less than 2,000,000 square feet. At the present time it is probably six times that amount. The normal post-war market for this type of lath is estimated at about 7,000,000 square feet.

Manitoba's capacity for wall-board and lath has more than doubled since 1939 and is now about 45,000,000 square feet per annum. It is estimated that the current market in the Prairie Provinces will absorb the total production, but a falling off in demand is anticipated when the backlog of construction is eliminated. It is the opinion of the industry that production may fall off to about 50% of capacity.

Currently the capacity for plaster, stucco and miscellaneous production can more than satisfy the Prairie market.

Possibilities of exporting gypsum products to the United States do not appear favourable.

Production figures for Manitoba are not available.

The Canadian production of gypsum products, exports and imports were as follows for the years 1939 - 1943.

	<u>Gypsum Wallboard</u>		<u>Plasters</u>		<u>Other Products</u>	
	Sq.Ft. '000	\$	Sq.Ft. '000	\$	Sq.Ft. '000	\$
1939	78,148	1,744,895	69,853	959,154	470,088	3,174,137
1940	114,534	2,712,355	69,889	897,932	500,508	4,110,795
1941	154,760	3,255,618	80,216	1,043,864	301,611	4,601,093
1942	164,411	3,849,253	51,475	682,528	298,181	4,829,962
1943	192,185	4,317,946	39,883	501,104	597,995	5,417,045

	<u>EXPORTS</u>		<u>IMPORTS</u>	
	<u>1939</u>		<u>1939</u>	
	<u>Tons</u>	<u>\$</u>	<u>Tons</u>	<u>\$</u>
Crude Gypsum (x)	1,260,231	1,390,126	695	18,075
Gypsum Ground	224	1,342	3	52
Plaster of Paris and Prepared Wall Plaster	<u>1,339</u>	<u>33,727</u>	<u>1,520</u>	<u>30,225</u>
Total	<u>1,261,794</u>	<u>1,425,195</u>	<u>2,218</u>	<u>48,352</u>
	<u>1943</u>		<u>1943</u>	
All Gypsum and Gypsum Products	185,688*	221,866	6,691	76,850

(x) Mostly from Nova Scotia

* Decrease - owing to lack of boats from Nova Scotia

In Canada there were nine plants producing gypsum products in 1939 and 1943; two in the Maritimes, two in Ontario, two in Manitoba, one each in Quebec, Alberta and British Columbia.

Some of the principal statistics for Canada are as follows:

	<u>Capital Employed</u> \$	<u>Salaries and Wages</u> \$	<u>Gross Value of Production</u> \$
1939	3,660,233	321,596	3,174,137
1941	3,431,883	464,776	4,601,093
1943	Not obtained	Not obtained	4,829,962

Lime

During 1944 stone quarries were operated for the production of lime at Stonewall, Moosehorn and Inwood. Four firms produced quick or hydrated lime. The principal statistics of the industry for Manitoba and Canada for 1939 and 1941 and the production over a number of years are as follows:

	<u>Number of Plants</u>	<u>Capital Invested \$</u>	<u>Number of Employees</u>	<u>Salaries and Wages \$</u>	<u>Gross Value of Production \$</u>
Manitoba					
1939	4	527,924	85	67,509	196,190
1941	4	527,916	98	95,266	273,492
Canada					
1939	*59	4,802,983	937	849,468	4,003,514
1941	*50	4,633,946	1,105	1,321,571	6,357,941

* Ten plants were located in the West and the balance in Eastern Canada.

	<u>Production</u>			
	<u>Manitoba</u>		<u>Canada</u>	
	<u>Tons</u>	<u>\$</u>	<u>Tons</u>	<u>\$</u>
1929	32,246	361,104	674,087	5,908,610
1932	18,235	172,110	320,650	2,394,537
1933	18,032	167,640	325,540	2,432,306
1934	16,568	163,608	368,113	2,745,797
1937	22,597	215,165	549,353	3,824,912
1939	20,032	196,190	552,209	4,003,514
1940	22,167	217,547	716,730	5,194,555
1941	27,100	273,492	860,885	6,357,941
1942	26,424	265,079	884,830	6,530,839
1943	30,038	307,819	907,768	6,832,992
1944	29,894	301,132	738,202	5,948,079

Lime is one of the great basic raw materials in the chemical industry, over 90% of the present Canadian production being used in that industry. It is not surprising, therefore, that about 90% of the total Canadian production is in Ontario and Quebec. Manitoba's production represents about 3 - 4% of the total. About 75% of the

Canadian production is quicklime and the balance hydrated lime.

The same proportion holds true for Manitoba. The pulp and paper and mining industries consume a large proportion of the lime produced in Manitoba. About 70% is sold outside of the province.

The market for Manitoba lime should expand due to increased demands for the building trades, the pulp and paper industry and the mining industry.

Salt

Salt is manufactured in Manitoba by Canadian Industries Limited at Neepawa. The source of the salt is a naturally arising brine containing about 15% of salt.

As there is no other production of salt west of Windsor, Ontario, or east of Waterways, Alberta, this plant is strategically located to supply the markets of Manitoba, Saskatchewan and those parts of Ontario adjacent to Manitoba.

The production of commercial salt in Manitoba and Canada for a number of years is shown in the following table:

	<u>Manitoba</u>		<u>Canada</u>	
	<u>Tons</u>	<u>\$</u>	<u>Tons</u>	<u>\$</u>
1938	2,920	34,979	269,107	1,799,465
1939	2,453	35,888	236,542	2,240,673
1940	3,076	45,731	240,705	2,464,297
1941	13,051	115,367	302,134	2,765,512
1942	22,706	397,101	326,124	3,274,406
1943	27,523	497,227	341,541	3,395,036
1944	27,267	488,776	325,018	3,498,526

In addition to the salt used commercially, large quantities of salt brine are used in chemical manufacture, but Manitoba production is confined to commercial salt only.

Capacity of the two plants in Western Canada is in balance with demand. The establishment of chemical industries using salt

as a basic raw material, - for example, caustic soda, chlorine, or soda ash, would largely increase the consumption of salt or salt brine, but such developments have not appeared commercially feasible in Manitoba due to limited markets and various technical considerations.

Glass and Glass Products

Glass is not now manufactured in Manitoba, although manufacture of bottles and other containers has been undertaken on two different occasions. The last attempt to establish this industry failed when the plant shut down in 1943.

The necessity of importing soda ash from Ontario and the relatively high cost of fuel combined with a limited market are serious disadvantages to the establishment of the industry in the province.

Pressed, blown and drawn glass were produced in five plants in Canada in 1939 and in six plants in 1943. One of these plants was in Alberta and the others in Ontario and Quebec.

Cut and bevelled glass were produced in 68 plants in 1939 and 85 plants in 1943. In 1943 there were 52 plants in Ontario, 22 in Quebec, 5 in British Columbia, 4 in Manitoba and one each in Alberta and New Brunswick. In 1943 the four plants which were in operation in Manitoba produced goods valued at \$207,543, about 0.8% of the total value of glass production in Canada. Products made were mirrors, bevel plate and leaded lights, frost shields, window and auto glass, bottle and other containers.

Statistics of the glass industry for Canada follow:

<u>Year</u>	<u>Number of Plants</u>	<u>Capital Employed \$</u>	<u>Number of Employees</u>	<u>Salaries and Wages \$</u>	<u>Cost of Materials \$</u>	<u>Gross Value of Production \$</u>
1939	73	16,534,181	3,372	3,948,603	4,559,732	12,529,050
1941	80	19,719,438	4,649	6,062,919	7,687,353	21,100,323
1943	91	-	5,688	8,314,691	9,095,016	26,299,338

			<u>Production</u>	
			<u>1939</u>	<u>1943</u>
			<u>Value \$</u>	<u>Value \$</u>
Pressed, Blown and Drawn Glass			8,854,629	18,067,808
<u>Cut and Bevelled Glass</u>				
Bent Plate Glass			7,856	7,780
Bevelled or Polished Edge Plate			169,639	213,201
Chipped or Etched Plate			6,072	22,577
Plate Glass Signs			41,918	2,705
Plate Glass Mirrors			750,585	1,127,333
Bent Sheet Glass			47,133	21,355
Bevelled or Polished Edge Sheet			21,258	76,217
Etched Sheet Glass			12,173	23,134
Sheet Glass Signs			3,914	10,486
Sheet Glass Mirrors			169,840	489,511
Leaded Glass			113,024	88,297
Cut Glass (Tumblers, Bowls, etc.)			277,483	401,279
Optical Lenses			86,000	1,285,073
Chemical Glassware			5,477	329,962
Custom Work			23,665	56,461
All Other Products (including Laminated and Safety Glass)			<u>1,938,384</u>	<u>4,076,159</u>
			<u>\$3,674,421</u>	<u>\$8,231,530</u>

IMPORTS

	<u>1939</u>		<u>1943</u>	
	<u>Square Feet</u>	<u>Value \$</u>	<u>Square Feet</u>	<u>Value \$</u>
<u>Plate, Sheet and Window Glass</u>				
Common window	48,801,227	1,159,896	36,022,155	2,049,442
Plate	2,979,167	1,056,335	3,537,602	1,215,588
Sheets, and Bent Plate N.O.P.		419,275		346,242
Sheets, wired		95,526		127,541
Laminated glass and manufacturers N.O.P.		7,651		18,287
<u>Glass, Cut, Pressed or Blown</u>				
Glass carboys, bottles, flasks, etc.		1,056,223		995,982
High thermal shock resisting glassware		523,777		2,052,255
Incandescent lamp bulbs and tubing				
for manufacture of incandescent lamps		549,570		853,732
Glass table-ware & cut glass ware N.O.P.		949,354		273,086
Glass plates or discs, rough cut for				
manufacture of optical instruments		183,472		396,449
Lenses		75,397		288,434
Decanters and machine made glass				
tumblers		152,882		146,370
Hollow shapes of glass and plastics				
moulded for manufacture of electric				
light fixtures		315,015		406,811
Lamp chimneys and glass shades		86,998		33,879
<u>Glass, Stained, Ornamental and Silvered</u>				
Coloured and ornamental window glass		74,295		39,826
Painted, chipped, figured, etc.,				
white glass		35,899		92,763
Silvered glass, N.O.P.		134,608		9,243
<u>Other Glass and Glassware</u>				
Photographic dry plates		23,475		47,183
Finished spectacles or eye-glass lenses		81,190		93,061
Artificial eyes and contact lenses		2,579		7,619
Articles of glass, not plate or sheet				
designed to be cut, mounted or electro-				
plated, etc.		216,371		249,147
Blanks of clear glass for manufacture				
of reflectors		-		21,557
Beads, or shapes for manufacture of				
imitation pearls		-		8,903
Manufacture of glass N.O.P.		715,315		900,038
Total Imports		<u>\$7,915,113</u>		<u>\$10,673,438</u>

EXPORTS AND RE-EXPORTS

	<u>1939</u>	<u>1943</u>
	<u>Value \$</u>	<u>Value \$</u>
All glass and glassware	166,949	
Common and colourless window glass	-	77,035
Glass and Glassware N.O.P.	-	563,182
Total	<u>\$166,949</u>	<u>\$640,217</u>

Monumental and Ornamental Stone Products

There are thirteen plants in Manitoba, eight in Greater Winnipeg, three in Brandon, one in Portage la Prairie and one in Neepawa. In 1939, monuments represented some 87% of the total value of production, building stone 11%, and the balance, miscellaneous products. In 1943 the comparable percentages were 63-1/2% and 17-1/2%. Granite and marble were used for some 90% of the requirements.

The principal statistics relating to this industry are shown for Manitoba and Canada for the years 1939 and 1943. Production is largely centred in Ontario and Quebec. Manitoba's production is about 3% of the Canadian total.

	<u>Number of Plants</u>	<u>Capital Employed \$</u>	<u>Number of Employees</u>	<u>Salaries and Wages \$</u>	<u>Gross Value of Production \$</u>
Manitoba					
1939	13	172,770	53	41,346	102,638
1943	13	194,413	38	50,763	132,743
Canada					
1939	190	4,991,636	1,257	1,458,780	3,805,989
1943	151	3,345,642	857	1,256,415	4,098,100

Miscellaneous Products

This group includes the production of Pintsch oil gas, foundry facings, refractories, asphalt emulsions, graphite and carbon electrodes, fuel briquettes, carbon brushes, and many other items.

In 1939 there was only one plant in Manitoba classified in this group. Its production was Pintsch oil gas. In 1943 there were four plants mainly producing the following products, Pintsch oil gas, limestone poultry grit, roofing and siding and frost shields.

The Canadian production was \$21,460,553 in 1943, while that

of Manitoba was only \$187,507. Ontario and Quebec accounted for more than 90% of the production.

The principal statistics for this group of industries are shown for Manitoba and Canada for the years 1939 and 1943.

	Number of Plants	Capital Invested \$	Number of Employees	Salaries and Wages \$	Cost of Materials \$	Gross Value of Production \$
Manitoba						
1943	4	160,942	29	28,769	42,524	187,507
Canada						
1939	49	7,970,460	975	1,232,707	2,217,698	6,465,545
1943	47	15,637,918	1,906	3,220,649	10,182,144	21,460,553

The breakdown of the Canadian production for 1943 follows:

	1943 Value \$
Asphalt emulsions	340,913
Foundry Facings and Partings	206,958
Core oil and core compounds	154,618
Pintsch gas	640,490
Refractories	1,197,266
All others	18,920,308
Total	<u>\$21,460,553</u>

All others include carbon and graphite electrodes, chalk and wax crayons, etc.

Rock Wool

The production of rock wool has been confined chiefly to Ontario and Quebec with no production in Manitoba. Of the five plants in operation in Canada in 1943 and 1944, four were located in Ontario and one in Quebec.

The chief statistics of the industry in 1943 follow:

	<u>Number of Plants</u>	<u>Number of Employees</u>	<u>Salaries and Wages \$</u>	<u>Cost of Materials \$</u>	<u>Selling Value \$</u>
Canada 1943	5	249	390,534	813,755	1,707,501

The production in Canada of rock wool and imports are shown for a number of years.

<u>Year</u>	<u>Production</u>	<u>Imports</u>	
	<u>Value \$</u>	<u>Tons</u>	<u>Value \$</u>
1936	265,472	1,296	101,592
1939	525,998	910	44,860
1940	935,229	1,041	52,233
1941	1,185,324	1,317	74,791
1942	1,417,258	807	54,776
1943	1,707,501	920	72,780
1944	1,617,420	1,310	147,862
1945	*	4,495	460,677

* Not yet available at time of compilation of information.

The production of rock wool in Canada by grades, for 1943 and 1944 was as follows:

	<u>1943</u>		<u>1944</u>	
	<u>Quantity</u>	<u>Value \$</u>	<u>Quantity</u>	<u>Value \$</u>
4" batts	74,030 sq.ft.	3,268	304,010 sq.ft.	15,141
3" "	13,020,551 " "	433,914	14,760,545 " "	517,094
2" "	24,738,379 " "	692,134	19,062,195 " "	515,699
1" "	3,255,630 " "	68,969	1,002,283 " "	21,182
Granulated	3,208,415 cu.ft.	381,003	Not obtained	440,083
Bulk	714,558 " "	95,083	" "	68,504
Industrial	311,721 " "	33,130	" "	39,717
Total		<u>\$1,707,501</u>		<u>\$1,617,420</u>

It is estimated that the consumption of rock wool in Canada in 1943 was equivalent to about 40,000 - 42,000 tons. Based on this usage, the number of existing buildings, building permits and temperature variations, it is estimated that a market for at least

6,600 tons a year could be developed in the Prairie Provinces with about 2,000 tons in Manitoba.

Rock wool is bulky and freight charges are high, therefore, production in the consumption area is desirable. At the present time a small plant near Moose Jaw has the only production of rock wool in the Prairie Provinces. Limestone, clay and cheap electric power are available in the vicinity of Greater Winnipeg. A plant to produce rock wool using the electric furnace method appears commercially feasible.

Artificial Abrasives and Abrasive Products

There is no manufacture of artificial abrasives or abrasive products in Manitoba.

The chief artificial abrasives manufactured in Canada are silicon carbide (carborundum) and fused alumina, which comprise about 70 - 75% of the production. They are produced in six plants, four of which are located in Ontario and two in Quebec. The production is largely exported.

If the Canadian artificial abrasive industry should contemplate further expansion it might look to the relatively cheap power available in Manitoba as artificial abrasives are electric furnace products and power is an important cost factor.

Abrasive products were produced in nine plants in 1943, all in Ontario. Products manufactured were abrasive wheels and segments, sharpening stones and files, abrasive cloth and paper. Limited production in any one of these products might be feasible.

The chief statistics of the industry in Canada are shown in the following table for 1939 and 1943.

Year	Number of Plants	Capital Employed \$	Number of Employees	Salaries and Wages \$	Cost of Materials \$	Gross Value of Production \$
Canada						
1939	16	7,179,801	1,099	1,630,889	2,971,056	9,275,143
1943	15	13,172,836	3,336	6,453,769	11,581,923	36,609,928

The products manufactured in the years 1939 and 1943 were as follows:

	1939		1943	
	Tons	Value \$	Tons	Value \$
Crude Silicon Carbide	17,225	1,865,604	51,281	6,846,087
Crude Fused Alumina	51,118	4,565,569	190,727	20,543,657
Silicon Carbide, Firesand, etc.	416	10,034	229	14,336
Abrasive Wheels and Segments	-	1,117,689	-	5,114,962
Sharpening Stones and Files	-	96,217	-	303,913
Ferro-silicon	5,698	65,533		240,430
All other products		1,554,497		3,546,543
		<u>\$9,275,143</u>		<u>\$36,609,928</u>

The materials used in the industry in 1939 and 1943 are shown in the following table. Bauxite and pure alumina comprise about 50% of the total cost.

	1939		1943	
	<u>Tons</u>	<u>Value</u> <u>\$</u>	<u>Tons</u>	<u>Value</u> <u>\$</u>
Bauxite and Pure Alumina	60,441	1,440,406	227,662	5,902,898
Coke and Coal (mostly coke)	27,081	271,770	80,845	1,056,059
Artificial Abrasive Grains	2,996	370,482	13,154	1,356,140
Silica Sand	32,661	161,514	89,022	511,649
Natural Abrasive Grains (garnet, emery, quartz and others)	356	40,786	539	60,768
Electrodes	986	119,845	4,279	520,236
Bonding and Bushing Materials	378	57,739	576	55,907
Iron Borings	5,993	47,996	20,889	283,311
Feldspar	45	1,368	117	5,776
Salt	260	2,265	410	4,793
Sawdust	6,155	16,149	12,766	44,223
Cotton Cloth		45,166		340,709
Kraft and Ropepaper		93,495		21,425
Containers and Packing Material		34,378		114,823
All Other		267,697		1,303,206
		<u>\$2,971,056</u>		<u>\$11,581,923</u>

The value of Canadian imports and exports of abrasives
and abrasive products were as follows for 1939 and 1943:

	<u>1939</u>	<u>IMPORTS</u>	<u>1943</u>
	<u>Value</u> <u>\$</u>		<u>Value</u> <u>\$</u>
Artificial Abrasive Grains	642,792		1,915,715
Diamond Dust and Black Diamond for Borers	4,129,532		1,631,019
Diatomaceous or Infusorial Earth	128,808		184,010
Emery in Bulk	55,967		78,303
Grinding Wheels	100,977		493,247
Manufactures of Emery or Abrasives N.O.P.	43,301		81,984
Grinding Stones or Blocks	22,586		115,561
Grindstones - not mounted	126,260		64,731
Grindstones - N.O.P.	7,013		2,266
Pumice, Lava, etc.	29,314		19,479
Sandpaper, Glass, Flint and Emery Paper and Cloth	60,797		102,303
	<u>\$5,347,347</u>		<u>\$4,688,618</u>

EXPORTS

	<u>1939</u>	<u>1943</u>
	Value	Value
	\$	\$
Abrasives, Artificial, Crude including Carborundum	4,380,148	16,894,102
Abrasives, Natural	11,827	1,425
Sandpaper, Glass, Flint and Emery Paper and Cloth	122,296	218,125
Wheel and Stones, Artificial	47,158	676,130
Abrasives	6,312	5,032
Manufactured Grindstones		
	<u>\$4,567,741</u>	<u>\$17,794,814</u>

CHEMICALS AND ALLIED PRODUCTS INDUSTRIES

Paints, Pigments & Varnishes

Medicinal & Pharmaceutical Preparations

Toilet Preparations

Soaps, Washing Compounds & Cleaning Preparations

Polishes and Dressings

Compressed Gases

Adhesives

Miscellaneous Chemical Products

Chemical Fertilizers

Heavy Chemicals

Paints, Pigments and Varnishes

There are five paint and varnish plants in Manitoba, all located in Greater Winnipeg. The gross value of their production in 1939 was 4.6% of the Canadian total and, in 1943, 4.8%. Ontario and Quebec together accounted for about 87% of the Canadian production. The gross value of production and other statistics are shown for Manitoba and Canada for 1939 and 1943:

	No. of Plants	Capital Invested \$	Number of Employees	Salaries & Wages \$	Gross Value of Production \$
Manitoba					
1939	5	1,470,328	208	256,417	1,202,886
1943	5	2,110,073	256	392,865	2,148,991
Canada					
1939	93	26,348,301	3,540	5,311,616	25,855,506
1943	96	33,330,845	4,589	8,261,723	45,067,845

In Manitoba the cost of raw materials at the plant was \$683,287 in 1939 and \$1,187,978 in 1943. In excess of 90% of all materials came from outside the province. Paper cartons, labels, a portion of the linseed oil and a few miscellaneous materials were of local source.

The estimated value of paints, pigments and varnishes consumed in Canada was \$28,957,800 in 1939 and \$49,482,300 in 1943.

Based on the 1943 value and on a per capita basis, the Manitoba and Prairie demand is estimated at \$2,968,950 and \$9,896,600 respectively.

As there is only one plant in Saskatchewan and one in Alberta, their production figures are not available; however, the total production in the Prairie Provinces in 1943 was probably in the order of \$2,700,000. Some further expansion in the paint and varnish industry, therefore, appears feasible. It is our understanding that an expansion of present manufacturing capacity in Manitoba is anticipated.

Medicinal & Pharmaceutical Preparations

The gross value of production in this industry for Manitoba and Canada for the years 1939 and 1943 was as follows:

	Manitoba	Canada
	<u>\$</u>	<u>\$</u>
1939	1,205,342	27,184,262
1943	1,355,356	50,772,686

It will be noted that Manitoba production was 4.5% and 2.5% of the Canadian total. This relative percentage decline can be attributed to the war-time demand largely met by the industry in Eastern Canada. Some 95% of the industry is located in Ontario and Quebec.

The number of establishments, capital invested and other statistics are shown for Manitoba and Canada for the years 1939 and 1943:

	No. of Plants	Capital Invested \$	Number of Employees	Salaries & Wages \$	Cost of Materials \$
Manitoba					
1939	7	1,174,160	134	152,500	514,555
1943	7	1,718,131	153	183,476	575,724
Canada					
1939	174	25,282,626	4,388	5,906,891	9,804,525
1943	205	41,791,686	7,187	10,012,562	18,997,079

A large percentage of the raw materials used in Manitoba is imported into the province.

The estimated value of medicinal and pharmaceutical preparations consumed in Canada, based on 1943 production, imports and exports, was about \$55,000,000. On a per capita basis, Manitoba consumption should total about \$3,300,000 and the Prairies, \$11,000,000. Manitoba production in 1943 amounted to \$1,355,356. The total production in the Prairie Provinces combined was some \$1,500,000.

With current production about 40% of the estimated requirements of the province and about 14% of the Prairies, it would appear that there is room for expansion of the industry in Manitoba.

Toilet Preparations

The toilet preparations industry in Canada is monopolized by Ontario and Quebec where in excess of 98% of the production occurs. The gross value of production from all sources in Canada amounted to \$8,194,442 in 1939, of which Ontario and Quebec were responsible for \$7,858,098. The corresponding figures for 1943 were \$18,629,034 and \$18,285,005. Manitoba's value of production, which was only \$30,244 in 1939, increased to \$133,118 in 1943.

Additional statistics of those plants whose main products are toilet preparations are shown for Manitoba and Canada for 1939 and 1943:

	No. of Plants	Capital Invested \$	Number of Employees	Salaries & Wages \$	Cost of Materials \$
Manitoba					
1939	3	43,517	11	8,139	13,937
1943	4	55,322	63	63,810	55,979
Canada					
1939	86	5,919,818	1,135	1,304,574	2,792,754
1943	87	9,989,810	1,889	2,386,033	5,123,020

Expansion of production of these commodities in Manitoba would appear feasible.

Soaps, Washing Compounds & Cleaning Preparations

In 1939 and 1943 there were eight plants in Manitoba manufacturing soaps, washing compounds and cleaning preparations as their main products. In 1939 three were engaged primarily in manufacturing soap, two in washing compounds and three in cleaning preparations. In 1943 the plants numbered five, one and two respectively. All plants are located in Greater Winnipeg.

The following table shows some statistics for Manitoba and Canada for industries as classified above:

	No. of Plants	Capital Invested \$	Number of Employees	Salaries & Wages \$	Gross Value of Production \$
Manitoba					
1939	8	915,550	111	130,615	723,323
1943	8	876,102	90	133,724	729,805
Canada					
1939	110	14,891,150	2,406	3,142,213	20,145,072
1943	134	22,765,347	3,220	5,853,026	31,491,328

The gross value of production for the three Prairie Provinces in 1943 was \$931,942.

Manitoba's gross value of production represented 3.6% of the Canadian production in 1939 and 2.3% in 1943. The combined production of Ontario and Quebec accounts for over 90% of the Canadian production.

The division of the Manitoba production into soaps, washing compounds and cleaning preparations is not available. In Canada as a whole, soaps in 1939 accounted for \$15,731,303 or 78.5% of the total value of production and, in 1943, \$23,636,692 or 75.1% of the total. Washing and cleaning preparations accounted for the balance - \$4,413,769 and \$7,854,636 respectively.

Other firms not classified as soap manufacturers produce a certain amount of soap, washing and cleaning preparations, but the amount is small by comparison, as shown by the following figures for the value of production in 1943:

	By Firms Classified as Soap Manufacturers \$	By Other Firms \$	Total \$
Soaps	23,636,692	1,651,816	25,288,508
Washing & Cleaning Preparations	7,854,636	829,372	8,684,008
Total	31,491,328	2,481,188	33,972,516

The quantity of soap produced in Manitoba is not available. Production in Canada in 1943 was 237,024,010 lbs. with an average value of 10.7¢ per lb. About two percent of the production was textile and mill soap. The corresponding production in 1939 was 201,665,223 lbs. with an average value of 8.1¢ per lb.

The Canadian imports and exports for 1939 and 1943 were as follows:

	<u>Imports</u>		<u>Exports</u>	
	<u>Lbs.</u>	<u>\$</u>	<u>Lbs.</u>	<u>\$</u>
1939	15,000,000	565,900	7,877,840	620,135
1943	3,057,600	262,901	12,059,504	1,629,556

Per Capita Consumption of Soap

About 224,543,000 lbs. of soap, with a production value of \$16,313,000, were consumed in Canada in 1939 and 228,022,000 lbs., valued at \$23,921,800, in 1943.

The per capita consumption in Canada as indicated by these figures is as follows:

	<u>Lbs.</u>	<u>\$</u>
1939 basis	19.9	1.45
1943 basis	19.3	2.02

Estimate of Manitoba and Prairie Market

The estimate of the Manitoba and Prairie demand for soap and washing and cleaning preparations, based on the Canadian per capita consumption for 1943, is as follows:

	<u>Soap</u>		<u>Washing and Cleaning Preparations</u>
	<u>Lbs.</u>	<u>\$</u>	<u>\$</u>
Manitoba	14,000,000	1,465,500	521,000
Prairie Provinces	47,880,000	5,023,620	1,823,600

As previously noted, the classification of Manitoba's production into soaps, washing and cleaning preparations is not available. The comparison of the total value of production for 1943 and the estimated demand are as follows:

	<u>Soaps, Washing & Cleaning Preparations</u>	
	<u>Production</u>	<u>Estimated Demand</u>
	<u>\$</u>	<u>\$</u>
Manitoba	729,805	1,987,500
Prairie Provinces	931,942	6,847,220

On the above basis it would appear that about 37% of Manitoba's demand is supplied by production in Manitoba and only 13.6% of the Prairie demand by Prairie production.

With the closing of Lever Bros. Winnipeg plant, it is anticipated that production in Manitoba will substantially decline.

Raw Materials used by the Soap Industry

The cost of raw materials at the soap plants in Manitoba and Canada in 1939 and 1943 was as follows:

	<u>Manitoba</u>	<u>Canada</u>
	<u>\$</u>	<u>\$</u>
1939	305,032	9,171,373
1943	405,690	16,625,211

On the following page is a table showing some of the materials used in large quantities by Canadian soap plants in 1943.

Some Materials Used in Soap Industry - 1943

	Quantity Lbs.	Cost at Works \$	Percentage of Total Cost of Materials
Cocconut Oil	22,398,329	1,738,961	10.5
Essential Oils	-	523,700	3.1
Fish Oils	9,185,949	564,270	3.4
Foots(Cotton seed, Olive etc.)	6,981,115	411,052	2.5
Palm Oils	18,875,341	1,091,091	6.5
Perfumes	-	386,302	2.3
Rosin	6,681,074	337,502	2.0
Soda Ash	14,812,174	234,293	1.4
Sodium Hydroxide	24,958,337	691,415	4.2
Sodium Silicate 400B ⁶	30,835,982	240,745	1.4
Tallow, Grease etc.	76,483,346	4,968,853	29.8
Containers	-	2,860,722	17.2
Total all Materials		16,625,211	

Although no definite figures are available, a higher proportion of tallow and grease and a lower proportion of imported vegetable oils are used in Manitoba than in Canada as a whole, due to their availability. With the exception of tallow and grease, practically all materials used by soap manufacturers in Manitoba are imported into the province. Among the main raw materials imported are alkalis brought from Ontario. If manufacture of alkalis could be undertaken in Manitoba, the soap manufacturing industry would be greatly stimulated.

The large Prairie market for soap warrants serious consideration of increased production facilities in Manitoba.

Polishes & Dressings

Production of polishes and dressings is limited in Manitoba and the Prairie Provinces to a few lines making a relatively small quantity incidental to other manufacturing.

The production of polishes in Canada in 1939 and 1943 was

as follows:

	1939		1943	
	<u>Quantity</u>	<u>\$</u>	<u>Quantity</u>	<u>\$</u>
Floor Wax Paste (lbs.)	5,246,838	1,112,961	5,815,594	1,681,961
Floor Wax & Polish Liquid (gals)	342,522	713,440	718,461	1,479,106
Shoe Polishes & Dressings		586,826		1,009,321
Furniture Polishes		216,289		318,020
Stove Polishes		82,411		110,345
Brass Polishes		37,307		80,489
Silver Polishes		78,981		108,041
Auto Polishes & Wax		59,877		68,673
Polishes, Other		<u>14,158</u>		<u>92,326</u>
Total		<u>2,902,250</u>		<u>4,948,282</u>

The industry is largely concentrated in Ontario and Quebec.

In 1943, 47 of the 52 Canadian establishments specializing in polishes and dressings were located in these two provinces.

Compressed Gases

The chief products included in the compressed gas industry are oxygen, acetylene, carbon dioxide, Hydrogen is also included as well as some anhydrous and aqua ammonia, nitrogen and nitrous oxide. Liquid chlorine, sulphur dioxide and nitrogen and hydrogen for the production of synthetic ammonia are reported in the heavy chemical industry.

There are three firms in Manitoba engaged in the compressed gas industry. Production consists of oxygen, acetylene and carbon dioxide. The value of production in 1939 was equal to about 9% of the Canadian total and, in 1943, 5.4%. During the war, production in Eastern Canada and in British Columbia increased at a greater rate than in Manitoba.

The following table shows the chief statistics for the industry in 1939 and 1943 for Manitoba and Canada:

	No. of Plants	Capital Invested \$	Number of Employees	Salaries & Wages \$	Gross Value of Production \$
Manitoba:					
1939	3	419,244	56	85,164	360,714
1943	3	480,603	71	113,259	498,685
Canada					
1939	31	5,501,069	672	1,037,718	4,009,829
1943	38	Not Obtained	1,080	1,848,753	9,212,226

The percentage distribution of the gross value of the Canadian production of oxygen, acetylene and carbon dioxide, as compared to the total value of production of the compressed gas industry for the years 1939 and 1943, is as follows:

	Oxygen %	Acetylene %	Carbon Dioxide %
1939	43.1	28.9	14.1
1943	51.3	26.7	13.5

Adhesives

The statistics of the adhesive industry cover only those factories making glue, mucilage, pastes or special cements as their chief products. There were 19 factories operating in 1939 and 22 in 1943. The factories are located in three provinces only, Ontario, Quebec and British Columbia, with only two factories in the latter province. Small amounts of mucilage, paste and liquid glue(sodium silicate) are produced as side lines in one or two factories in Winnipeg.

The chief statistics of the industry in Canada are shown
for 1939 and 1943:

	No. of Plants	Capital Invested \$	Number of Employees	Salaries & Wages \$	Cost of Materials \$	Gross Value of Production \$
1939	19	2,733,476	427	520,662	905,411	2,110,806
1943	22	4,408,819	651	1,091,721	3,037,649	5,736,151

The classification of the Canadian production by the products
manufactured by the industry in 1939 and 1943 was as follows:

	1939	
	Lbs.	\$
Bone and Hide Glue	4,515,629	672,193
Vegetable Glue, dry & liquid	9,918,525	597,188
Other Glues (Casein, Soyabean, fish, flexible etc.)	3,284,746	228,623
Grease	3,470,424	113,057
x Mucilage & Paste		144,808
All Other Products		354,937
Total		<u>2,110,806</u>

x Total amount of mucilage and paste made by all industries was \$231,813.

	1943	
	Lbs.	\$
Cements: Linoleum	901,330	45,642
Other	867,220	180,800
Glue: Bone and Hide	5,301,646	1,039,063
Casein	1,103,664	254,399
(a) Fish	26,180	15,776
Flexible	790,693	117,620
Soyabean	1,506,000	92,370
Synthetic Resin	8,977,932	963,876
Vegetable: Dry	2,253,957	195,051
Liquid	15,745,748	1,003,348
Other	137,533	11,002
(b) Mucilage	74,000	40,900
Paste: Dry	4,214,912	276,043
(c) Liquid	913,200	40,325
All Other Products		<u>1,459,936</u>
		<u>5,736,151</u>

(a) The total from all industries was valued at \$192,230.

(b) The total from all industries was valued at 84,904.

(c) The total from all industries was 15,745,748 lbs. valued at \$1,003,348.

The imports and exports of the various glues and pastes for 1939 were as follows:

	<u>Imports</u>	
	<u>Lbs.</u>	<u>\$</u>
Animal Glue	1,491,400	143,607
Vegetable Glues	1,337,544	47,937
Liquid Glue	123,008	28,355
Mucilage & Paste	371,457	37,926

	<u>Exports</u>	
	<u>Lbs.</u>	<u>\$</u>
Glue (not specified)	466,000	57,113
Glue Stock	6,754,000	35,126

Imports of animal glue increased since 1939, and the amounts and value are shown for 1942-1945:

	<u>Imports - Animal Glue</u>	
	<u>Lbs.</u>	<u>\$</u>
1942	3,371,050	557,809
1943	2,426,898	401,713
1944	2,601,440	435,957
1945	3,929,178	652,848

Based on production and imports, the apparent consumption of animal glue in 1939 was about 6,006,700 lbs. valued at \$815,800 (13.2¢ per lb.) and, in 1943, 7,728,500 lbs. valued at \$1,440,776 (18.6¢ per lb.). In 1944 the corresponding figures were 8,622,586 lbs. valued at \$1,580,668 (18.3¢ per lb.)

The main raw materials used in the production of animal glue are bones, hides and trimmings. The amounts used and cost at the works for 1939 and 1943 were as follows:

	<u>Bones</u>		<u>Hides and Trimmings</u>	
	<u>Tons</u>	<u>\$</u>	<u>Tons</u>	<u>\$</u>
1939	6,193	68,373	14,736	211,975
1943	7,105	100,858	15,660	324,544

The production of glue stock in Canada is as follows for 1939, 1942 and 1943:

	<u>Lbs.</u>	<u>\$</u>
1939	27,064,515	128,570
1942	33,380,321	314,182
1943	33,124,799	307,599

Practically all the above glue stock is produced in Eastern Canada. Exports of glue stock for 1939 amounted to some 6,700,000 lbs. valued at \$35,700.

A considerable portion of the exports were shipped by Canadian manufacturers of glue, who re-imported finished glue.

Possibilities for the Production of Animal Glue in Manitoba

The chief source of raw material for animal glue production in Manitoba is raw bones collected throughout the Prairie Provinces, particularly Alberta and Saskatchewan. The quantity of bones estimated to be available yearly is about 5,000 tons. The packers, in the main, convert their 'wastes' suitable for glue production to feeds and fertilizers. The glue stock available from tanneries in the Prairie Provinces is small.

There is competition for bones in the West from buyers in Eastern Canada and from the United States, with the latter obtaining the larger share.

The animal glue market in the three Prairie Provinces is estimated to be about 60,000 lbs. per year, but competition from synthetic resins and other adhesives may cut into this market.

Due to the overall shortage of raw materials and to the limited market, the possibilities of commercial production in Manitoba at the present time appear unattractive.

Exports of raw bones from Canada to the United States are shown for a specified number of years, and the increase during the war period will be noted:

	<u>Tons</u>	<u>\$</u>
1938	2,287	64,569
1939	2,925	65,409
1942	8,564	229,141
1943	3,395	129,502
1944	4,441	199,878
1945	6,183	275,240
1946 (1st 7 months]	1,904	91,906

Miscellaneous Chemical Products

This industry comprises the operations of a number of manufacturers of chemical products but, because of the diversified nature of their output, they cannot be classified with any of the main chemical groups.

The plants are arranged in six sub-groups, cellulose products, boiler compounds, sweeping compounds, insecticides, disinfectants and miscellaneous. The last group includes the production of matches, sulphonated oils, explosives, bakelite, moulded plastics, dyes, miscellaneous soaps etc.

Eight plants operated in Manitoba in 1939 and 1943 as follows:

	<u>Number of Plants</u>	
	<u>1939</u>	<u>1943</u>
Sweeping Compounds	1	2
Insecticides	2	3
Disinfectants	2	1
Miscellaneous (including explosives)	3	2

The gross value of production in Manitoba was \$621,525 in 1939 and \$9,563,019 in 1943. The large increase was mainly due to the war-time production of cordite at Transcona.

The gross value of production of the miscellaneous chemical products industry is shown for Manitoba, the Prairie Provinces and Canada for 1939 and 1943:

	<u>Manitoba</u>	<u>Prairie Provinces</u>	<u>Canada</u>
	\$	\$	\$
1939	621,525	784,390	25,788,906
1943	9,563,019	9,766,751	482,660,017

It will be noted that the greater part of the Prairie production is in Manitoba.

Additional statistics of the industry for Manitoba and Canada follow:

	<u>No. of Plants</u>	<u>Capital Invested \$</u>	<u>Number of Employees</u>	<u>Salaries & Wages \$</u>	<u>Cost of Materials \$</u>
Manitoba					
1939	8	566,424	56	108,590	331,586
1943	8	16,849,933	2,358	3,988,750	4,429,898
Canada					
1939	145	25,246,894	4,196	5,429,827	10,242,733
1943	200	505,359,005	61,428	94,496,031	242,940,411

Manitoba's production by individual groups is not readily available. Plastics and boiler compounds were not manufactured prior to 1943. Plastics, however, are now represented in a relatively small way. The market for boiler compounds is not large and is mainly supplied from Ontario production.

Matches are not made in Western Canada. It is understood that some consideration, at the present time, is being given to their manufacture.

Dyestuffs and tanning materials are not manufactured in Manitoba and the present market does not appear to warrant local manufacture.

The value of production in 1939 of some miscellaneous chemical products is shown for Canada as a whole:

	\$
Boiler Compounds	476,690
Insecticides	1,217,163
Disinfectants	403,852
Sweeping Compounds	65,945
Dyes Blended	163,219
Matches	1,894,768
Weed Killer	98,805
Cellulose Film(Cellophane)	2,245,403
Bakelite, Moulded Plastics & Vulcanized Fibre	1,485,505

Chemical Fertilizers

The market for chemical fertilizers in the Prairie Provinces consists largely of ammonium phosphate for sugar beet production. In 1945 about 25,000 tons were used in comparison to 7,000 tons in 1939, with Alberta using the largest portion.

The market is supplied by production from the large plant at Trail, B.C. Owing mainly to the relatively small local market and to the lack of raw materials, production in Manitoba should not be able to compete with that from Trail.

Heavy Chemicals

Sodium Silicate

Sodium silicate is largely used as an adhesive for corrugated cartons etc and in the soap and detergent industry. There is none manufactured in Manitoba.

It is produced from soda ash and sand by fusion in a glass furnace.

The market in the three Prairie Provinces is estimated to be about 2,080,000 lbs., of which some 2,000,000 lbs. are in Manitoba. Sodium silicate is used chiefly as a liquid consisting of approximately 40% sodium silicate and the balance water. As liquid, the market in

the three Prairie Provinces is equal to about 5,200,000 lbs. per year. At the present time the market is supplied by the Ontario producers who ship the solid sodium silicate to the major Western consumers; by this method, freight costs from the East on the water content of the liquid silicate are eliminated. Silicate dissolvers are leased to the larger consumers who supply their own needs as well as those of the smaller consumers, directly or indirectly. There were formerly four dissolvers in the Prairie Provinces but there are now three, one in Calgary and two in Manitoba.

The British Columbia market is mainly supplied from producers in the Western United States. These Western U.S. producers formerly served part of the Manitoba market and, at present, offer prices closely competitive to the Ontario producers.

As only two companies in Canada produce sodium silicate, both in Ontario, the production figures are not available for publication. The capacity for production is estimated to be about 90 tons per day.

The imports of sodium silicate, all grades, are shown for some years:

<u>Year</u>	<u>Tons</u>	<u>\$</u>
1938	2,713	84,177
1939	3,532	115,494
1942	1,943	89,250
1943	2,013	77,870
1944	2,548	102,561

Due to the limited market in the Prairie Provinces and the unavailability of raw materials, production of sodium silicate at the present time in Manitoba does not appear feasible.

Other Heavy Chemicals

Heavy chemicals, such as sulphuric acid, soda ash, caustic soda and chlorine, are not made in Manitoba. Based on figures of the Dominion Bureau of Statistics, the Prairie consumption of such chemicals is estimated as follows:

	<u>Tons</u>
Sulphuric Acid	2,500
Soda Ash	5,000 (largely in Alberta)
Caustic Soda	2,000
Chlorine	200

The existing market of the Prairie Provinces is small, but larger quantities of these chemicals would be used if they were available at lower cost. The markets and the raw material position appear unfavourable at the present time to the manufacture of alkalis. Further consideration might, however, be given to the possibility of manufacture of sulphuric acid which is used in a large number of industries.

MISCELLANEOUS INDUSTRIES

Brass and Copper Products

Electrical Apparatus & Supplies

Jewellery and Silverware

Beds, Springs and Mattresses

Brooms, Brushes and Mops

Brass and Copper Products

Classified in this group are plants and foundries engaged chiefly in the manufacture of brass, bronze and copper products other than electrical equipment.

In 1939 there were five plants in Manitoba and six in 1943. The corresponding numbers of plants in Canada were 129 and 158. The gross value of production in Manitoba in 1939 was \$646,643 and, in Canada, \$32,111,912. The gross value of the Canadian production in 1943 was \$192,987,718. Production figures for Manitoba have not been published for 1943 but are estimated at about \$2,000,000. There is one plant in Alberta and none in Saskatchewan. Quebec and Ontario combined accounted for 95% of the production in 1939 and 97% in 1943.

The capital invested in Manitoba in the industry in 1939 was \$559,095. There were 90 employees, with salaries and wages paid totalling \$129,115.

Brass and bronze castings of numerous types are produced in Manitoba and comprise the major portion of production. Requirements of the transportation companies are a major item. Fire extinguishers, some plumbers' fittings and various fabricated shapes are also produced. Aluminium castings are produced by one of the brass foundries.

Electrical Apparatus and Supplies

The products included in this industry are motors, generators, transformers, batteries, electric washing machines, vacuum cleaners, lighting fixtures, wire and cable, refrigerators, stoves, heaters, radios, lamps, conduit, wiring devices etc.

In 1943 the types of products made in Manitoba were as follows: Batteries (wet), auto, aeroplane and hot water heaters, frost shields, beauty parlor equipment, electrical fixtures, panel and switchboards,

switches, junction boxes, fluorescent lighting fixtures etc. Recently, dry batteries and washing machines have been added to the production.

The gross production value for 1939 and 1943 is shown for Manitoba and Canada:

	Manitoba \$	Canada \$
1939	588,971	89,060,578
1943	1,150,151	245,770,859

It will be noted that the production in Manitoba is relatively small compared to the Canadian total. Ontario and Quebec together produce some 99% of the total.

The number of plants and employees, capital invested, salaries and wages and cost of materials are shown for Manitoba and Canada for 1939 and 1943:

	Plants No. of	Capital Invested \$	Number of Employees	Salaries & Wages \$	Cost of Materials \$
Manitoba					
1939	10	400,585	124	162,949	265,585
1943	9	557,049	222	310,037	567,387
Canada					
1939	190	102,245,833	20,261	25,711,092	39,331,766
1943	223	161,260,825	46,928	76,906,994	109,281,060

The total production of various types of electrical equipment in Canada is shown for 1939 and 1943:

	1939		1943	
	Number	Selling \$ Value At Works	Number	Selling \$ Value At Works
Motors:				
1 H.P. & under, all types	203,635	2,487,819	157,331	3,714,270
1 - 5 H.P.	19	2,279	31,798	3,179,678
Over 5 to 100 H.P.	2,685	797,595	6,374	2,364,676
201 H.P. and over	48	217,618	49	320,814
Railway & Vehicle Motors	91	6,377	205	155,000
Other Motors	71	218,050	180	609,360
Motor Equipment		2,291,834		4,355,740
		5,022,672		14,699,748

	1939		1943	
	Number	Selling \$ Value At Works	Number	Selling \$ Value At Works
Transformers:				
All types and parts	-	4,755,557	-	8,444,430
Electric Generators & Parts exclusive of auto- mobile generators, engine driven & motor generator sets	-	1,334,702	-	7,544,055
Electrical Switch Gear & Protective Equipment	-	2,983,154	-	10,097,102
Conduit	-	1,147,440	-	1,451,076
Wiring Devices	-	3,698,108	-	4,215,353
Electric Lighting Fixtures		2,355,878	-	4,456,302
Incandescent Lamps:				
Standard	24,161,955	3,828,252	35,334,233	5,618,011
Miniature	11,087,021	597,196	21,737,956	1,220,676
Electric Wired Cable	-	15,242,918	-	33,554,943
Electric Batteries:				
Storage Batteries	-	3,613,317	-	7,478,944
Dry Cell Batteries	-	2,853,722	-	4,010,149
Parts & Supplies	-	638,037	-	962,838
Radios	348,507	8,678,130	979	18,840
Radio Receiving Tubes	2,527,200	1,246,972	4,106,047	2,256,086
Electric Washing Machines	92,057	4,549,421	5,373	336,300
Electric Domestic Refrigerators	51,534	5,914,220	358	33,470
Electric Flat Irons	188,346	385,177	60,483	212,551
Electric Toasters	163,893	248,939	7,788	52,476
Electric Vacuum Cleaners	49,669	1,750,156	4,163	98,512
Electric Stoves, Ranges & Cooking Stoves	33,227	2,504,570	5,522	484,228
Rangettes	13,725	232,982	4,345	105,427
Cooking Plates	77,441	158,759	28,469	137,408
Electric Domestic Water Heaters	22,972	127,333	11,535	80,556
Domestic Electric Ironing Machines	2,151	97,969	78	5,998

Imports

	1939 \$	1943 \$
Electric Motors, all types	1,822,699	3,427,071
Batteries & Parts	361,401	687,980
Electric Lamps	349,786	312,211
Rheostats & Controllers	608,839	1,510,997
Switches, Switchboards & Circuit Breakers	550,284	2,300,714
Telephone & Telegraph Apparatus	1,286,983	2,869,954
Radio Tubes	586,084	2,735,802
Radio Receiving Sets	208,109	2,279,087
Other Radio & Wireless Apparatus	1,878,998	13,247,972
Other Items	-	-
Total	13,751,833	48,541,588

Exports

Batteries	268,084	589,827
Radio & Wireless Apparatus	91,456	36,185,693
Dynamos, Generators & Motors	295,817	2,004,207
Electric Stoves & Parts	923,181	44,016
Ignition Apparatus	657,071	300,530
Other Items	1,013,860	1,976,179
Total	3,229,469	41,100,452

In view of Manitoba's power resources, the rural electrification schemes being undertaken in the Prairie Provinces and the natural growth of the electric industries, manufacturers of electrical equipment should find an expanding market and manufacture of additional types of equipment should be feasible.

Jewellery and Silverware

This industry includes the manufacture of -

- (a) Clocks, watches, rings and other jewellery
- (b) Sterling silverware and silver plate ware
- (c) Dental supplies, gold leaf, precious metal recovery etc.

The production in Manitoba and the Prairie Provinces is small and is confined to the manufacture and repair of miscellaneous jewellery and plating.

The gross value of production in 1939 in the Prairie Provinces was about \$45,000 and, in 1943, \$64,000. In 1943 there were seven firms in operation, three being in Manitoba. Production figures for Manitoba are not available. Two of the firms are classified as manufacturers of jewellery and the third as electro-platers. Ontario accounts for some 75% of the total production in Canada and Quebec about 22%.

The main statistics for the Prairie Provinces and Canada are as follows for 1943. The gross value of production in Canada in 1939 was \$14,229,560.

	No. of Plants	Capital Invested \$	Number of Employees	Salaries & Wages \$	Cost of Materials \$	Gross Value of Production \$
Prairie Provinces:						
1943	6	48,711	25	38,176	9,774	64,133
Canada						
1943	124	13,924,608	4,336	6,517,132	11,882,521	23,913,367

The value of production of jewellery, clocks, watches and watch cases in Canada is shown for 1939 and 1943:

	1939 \$	1943 \$
Jewellery	3,532,587	6,613,107
Clocks	1,005,938	480,746
Watches	583,762	237,152
Watch Cases	211,507	381,548

Imports:

Clocks, Time Recorders & Parts	506,692	638,577
Watches & Parts	1,578,488	3,844,395
Electro-plated Ware	1,259,785	881,208
Jewellery, miscellaneous	1,048,284	133,085
Spectacle Frames & Parts	641,969	1,081,272
All Other	232,315	81,893

Exports & Re-Exports:

Jewellers' Scrap	1,620,799	1,162,537
Clocks, Watches & Parts	469,183	314,168
All Other	179,141	268,366

Beds, Springs & Mattresses

This industry comprises all firms whose principal products are mattresses, springs, metal beds and cushions. There are certain firms who manufacture these commodities as subsidiary products. The production of these firms is not included in the figures given in this report, but their exclusion does not materially affect the figures on production of mattresses and springs.

Statistics of the industry for Canada and Manitoba for 1939 and 1943 are as follows:

	No. of Plants	Capital Invested \$	Number of Employees	Salaries & Wages \$	Gross Value of Production \$
Manitoba					
1939	4	1,397,321	359	367,915	1,562,565
1943	5	1,407,836	435	425,512	3,038,629
Canada					
1939	74	8,431,918	2,593	2,781,644	11,142,238
1943	76	10,080,519	2,856	4,301,681	17,683,860

A condensed summary of the principal products of the industry is given for Canada for 1943:

	\$
Mattresses	6,615,783
Springs	2,778,971
Beds, Couches & Cribs	3,705,669
Pillows & Cushions	894,488
Comforters	250,884
Furniture and Parts	1,831,588
Upholstering	124,332
All Other Products etc.	<u>1,482,145</u>
	<u>17,683,860</u>

Mattresses, springs, beds etc account for about 75% of the total production. No figures are available on the details of Manitoba's production.

It will be noted that Canadian production between 1939 and 1943 increased 59% and production in Manitoba, 95%; and, in 1939, Manitoba produced more than double the per capita requirement of the

province.

Manitoba production was 14% of the Canadian total in 1939 and rose to 17% in 1943.

Brooms, Brushes & Mops

In Manitoba, manufacture of these products is confined largely to corn brooms, industrial and other brushes and mops. The Canadian production in 1939 amounted to \$4,497,043 and reached a value of \$9,350,190 - over double - in 1943.

The gross value of production in Manitoba for some recent years follows:

	\$
1939	165,795
1940	199,568
1941	207,433
1943	305,467

While production has increased in the province, the rate of increase was less than for the Dominion. In 1939 Manitoba produced 3.7% of the Canadian total, but, in 1943, this was down to 3.2%.

The table below gives the Canadian value of production of the larger items for 1939 and 1943:

	1939 \$	1943 \$
Brooms, corn	962,427	1,598,026
Brushes, tooth	278,872	597,771
Brushes, shaving	95,428	599,066
Brushes, hair	171,514	417,339
Brushes, paint	1,006,503	1,527,427
Industrial Brushes	227,230	1,105,672
Mops, all kinds	448,271	949,350

Manitoba production is concentrated on products which constitute the main items of manufacture in Canada and represents some 7% of the Canadian production of these items.

Imports of brushes into Canada, chiefly toilet and tooth brushes, were valued at \$334,440 in 1939 and \$101,998 in 1943. Exports of all brushes in 1939 and 1943 were \$150,562 and \$484,996 respectively.

The value of broom corn imported and used in the Canadian industry in 1939 and 1943 was as follows:

	1939	1943
	<u>\$</u>	<u>\$</u>
Broom corn(imported)	261,426	960,561
Broom corn(used)	309,952	595,441

Principal statistics for the industry for Canada and Manitoba are given for the years 1939 and 1943:

	No. of Plants	Capital Invested \$	Number of Employees	Salaries & Wages \$	Gross Value of Production \$
	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>
Manitoba					
1939	5	167,737	67	54,970	165,795
1943	6	166,579	104	100,663	305,467
Canada					
1939	80	4,215,460	1,446	1,376,008	4,497,043
1943	88	6,155,907	2,236	2,478,173	9,350,190

Of the 88 plants in Canada, 19 have a capital investment of \$100,000 to \$500,000; 4 of \$500,000 to \$1,000,000 and 1 of over \$1,000,000. These 24 plants accounted in 1943 for 85% of the output.

LIST OF MANUFACTURING INDUSTRIES
And Their Degree of Representation
In Manitoba

In the preceding text, manufacturing production has been discussed for individual industries by groups. An extensive list follows with a notation indicating that the particular manufacturing industry concerned is "well represented", "represented", or "not represented". In certain specific instances which have been marked with an asterisk, consideration of establishment of additional or new facilities appears warranted, but a final decision must be predicated upon a detailed examination of all phases of such a project - for example - manufacturing cost, markets, competition, management, etc. It will be appreciated that it is very difficult to assess the possibilities of establishment or expansion of individual manufacturing industries. Adequate capital and good management are as important as opportunity, and competition is always difficult to assess.

Food

Breadstuffs	Well represented.
Fish	
Canned	Unrepresented
Fruit and Vegetable Preparations	
Fruit (Canned)	Unrepresented
Vegetables (Canned)	* Represented
Vegetables (Dehydrated)	Represented
Jams and Jellies	Unrepresented
Marmalade	Represented
Mincemeat	Represented
Pickles	Well represented
Relishes and Sauces	Represented
Peanut Butter	Well represented
Vinegar	Well represented
Meats	
Fresh, Cured and Cooked Meats	Well represented
Canned Meats	Well represented
Milk Products	
Butter (Creamery)	Well represented
Cheese (Cheddar)	Well represented
Cheese (Processed)	Well represented
Ice-Cream	Well represented
Milk (Condensed)	Unrepresented
Milk (Evaporated)	Unrepresented
Milk (Powder)	Unrepresented (Milk Powder for Feed is represented)
Skim Milk	Unrepresented
Buttermilk Powder	Unrepresented

Oils and Fats

Lard and Shortening

Well represented

Vegetable Oil

Represented

Sugar

Represented

Miscellaneous

Breakfast Foods (Unprepared)

Well represented

Breakfast Foods (Prepared)

*** Represented**

Baking Powder

Well represented

Coffee (Roasted)

Well represented

Coffee (Substitute)

Represented

Bread Improver

Represented

Confectionery

Well represented

Eggs (Frozen)

Well represented

Eggs (Powder)

Well represented

Flavours, Extracts, etc.

Represented

Flour, Wheat

Well represented

Foods, (Infant and Invalid)

Unrepresented

Macaroni and Spaghetti

Well represented

Powders (Jelly)

Well represented

Peanuts (Roasted)

Represented

Potato Chips

Represented

Spices

Represented

Tea, Blended and Packed

Well represented

Drink and Tobacco

Beverages - Alcoholic

Whiskies and other potable spirits

Not represented

Beer, Ale, Stout and Porter

Well represented

Beverages - Non-Alcoholic

Aerated Waters	Well represented
Distilled Water	Well represented
Tobacco	
Tobacco	Represented (slightly)
Cigars	Not represented
Cigarettes	Not represented
Snuff	Represented (slightly)

Clothing

Boots and Shoes

Leather Boots, Shoes	* Represented
Slippers	Represented
Felt Boots	Represented
Rubbers	Unrepresented

Fur Goods

Men's Fur Coats	Well represented
Women's Fur Coats, Boleros, Jackets	Well represented
Capes (Fur)	Well represented
Collars (Fur)	Well represented
Scarves and Other Fur Neckwear	Well represented
Muffs (Fur)	Well represented
Caps (Fur)	Represented

Garments and Personal Furnishings

Men's Wear

Belts (Leather)	Represented
Caps (Cloth, Uniform and Leather)	Well represented
Coats (Leather)	Well represented
Gloves (Work)	Well represented
Gloves (Fine)	Represented

Gowns (Dressing)	Unrepresented
Handkerchiefs	Unrepresented
Hats (Fur Felt)	Unrepresented
Hats (Wool Felt)	Represented
Hats (Straw)	Unrepresented
Neckties	Unrepresented
Overalls	Well represented
Pants (Fine)	Well represented
Pants (Work)	Well represented
Pyjamas	Unrepresented
Raincoats	Unrepresented
Scarves and Mufflers	Unrepresented
Shirts (Fine)	Represented
Shirts (Work)	Well represented
Socks (Fine)	Unrepresented
Socks (Heavy)	Represented
Suits and Overcoats (Factory)	* Unrepresented
Suspenders	Represented
Sweaters	Represented
Underwear (Cotton)	Unrepresented
Underwear (Woollen)	Unrepresented
Uniforms	Represented
Windbreakers	Well represented
Women's Wear	
Blouses	Represented
Coats	Well represented
Corsets and Girdles	Unrepresented
Dresses	* Represented
Gloves (Leather)	Represented

Gloves (Fabric)	Unrepresented
Handbags	* Unrepresented
Hosiery	Unrepresented
Millinery	Represented
Neckwear	Represented
Raincoats	Unrepresented
Skirts	Represented
Sports Wear	Well represented
Suits	Well represented
Sweaters	Represented
Underslips	Represented
Underwear (Cotton, Wool, etc.)	Unrepresented
Uniforms	Represented
<u>Personal Utilities</u>	
Jewellery	Represented
Timepieces	
Clocks	Unrepresented
Watches	Unrepresented
Recreation Supplies	
Balls, Golf, Tennis, etc.	Unrepresented
Boats and Canoes	Represented
Cameras	Unrepresented
Fishing Lures	Represented
Golf Clubs and Equipment	Unrepresented
Tennis Rackets	Unrepresented
Skis	Represented
Musical Instruments	Unrepresented

Personal Utilities

Artificial Flowers	Represented
Brushes, Hair, Clothes and Tooth	Unrepresented
Buttons	Unrepresented
Dentifrices	Unrepresented
Luggage	Represented
Pencils	Unrepresented
Pens (Fountain)	Unrepresented
Pipes (Tobacco)	Unrepresented
Pharmaceuticals	* Represented
Powder (Tooth)	Unrepresented
Razors (Electric)	Unrepresented
Razor (Blades)	Unrepresented
Soaps	* Represented
Toilet Preparations	* Represented
Regalia and Society Emblems	Represented
Umbrellas	Unrepresented
Wallets	Represented

House Furnishings

Awnings and Verandah Curtains	Well represented
Beds and Bedding (Including Springs and Mattresses)	Well represented
Brooms, Brushes and Mops	Well represented
Furniture	
Bedroom	* Unrepresented
Dining-Room	* Unrepresented
Dinette	Represented
Living-Room (Upholstered)	Well represented
Wicker, Reed and Rattan	Represented
Kitchen and Other	* Represented
Radio Cabinets	Unrepresented

Blankets	* Represented
Bed Spreads	Represented
Carpets and Rugs	Unrepresented (except remades)
Cleaners (Vacuum)	Unrepresented
Clothes Pins	Unrepresented
Comforters	Represented
Curtain Material	Unrepresented
Curtain Rods and Fixtures	Represented
Cushions	Represented
Cutlery	Unrepresented
Flat Ware, E.S.P.	Unrepresented
Galvanized Ware	Represented
Grills, Hot Plates	Represented
Heaters (Electric and Other)	Represented
Irons (Flat and Electric)	Unrepresented
Kitchenware (Aluminum)	Unrepresented
Kitchenware (Other)	Represented
Lamps (Table, Floor)	Represented
Lampshades	Represented
Lamps (Incandescent)	Unrepresented
Lawn Mowers	Unrepresented
Mats (Rubber)	Represented
Pianos and Organs	Unrepresented
Polishes	* Represented
Radios	Unrepresented
Refrigerators (Electric)	Unrepresented
Refrigerators (Other)	Unrepresented
Shades (Window)	Unrepresented
Venetian Blinds	Represented

Stepladders, Clothes Driers and Ironing Boards	Well represented
Stove Pipe Elbows	Well represented
Stoves (Coal and Wood)	* Unrepresented
Stoves (Camp)	Represented
Stoves (Electric)	Unrepresented
Stoves (Gas)	* Unrepresented
Stove Parts	Represented
Sweepers (Carpet)	Unrepresented
Swings (Lawn)	Unrepresented
Tapestries (Material)	Unrepresented
Tinware	Represented
Wash Boards	Unrepresented
Woodenware (Kitchen)	Represented
Wringers (Clothes)	Unrepresented
<u>Books, Stationery</u>	
Newspapers (Daily)	Well represented
Newspapers (Weekly)	Well represented
Magazines	Represented
Catalogues and Advertising Material	Well Represented
Counter Cheque Books	Well represented
Commercial Stationery	Well represented
Envelopes	Well represented
Games	Not represented
Greeting Cards	Represented
Milk Bottle Caps	Unrepresented
Personal Printing	Well represented
Programs	Well represented
Paper Napkins	Represented

Vehicles and Vessels

Automobiles (Commercial)	Unrepresented
Automobiles (Passenger)	Unrepresented
Auto Trailers	Represented
Bicycles	Unrepresented
Buses and Bus Bodies	Represented
Carriages (Baby)	Unrepresented
Cars (Dump)	Represented
Railway Rolling Stock	Well represented
Wagons	Represented

Producers Materials

Farm Materials

Beekeepers' Supplies	Well represented
Beet Pulp	Represented
Blankets (Horse)	Represented
Cans (Milk and Cream)	Represented
Feed (Stock)	Well represented
(Poultry)	Well represented
Fertilizers (Chemical)	Unrepresented
(Other)	Represented
Remedies (Stock and Poultry)	Represented
Rope (Sisal and Other)	Unrepresented
Salt	Well represented
Twine (Binder)	* Unrepresented

Manufacturing Materials

Acid (Nitric)	Unrepresented
Acid (Sulphuric)	* Unrepresented
Alcohol (Denatured)	Unrepresented
Alkalis (Soda Ash, Caustic Soda, Silicate of Soda)	Unrepresented

Aluminium	Unrepresented
Bags (Cotton and Jute)	Well represented
(Paper)	Represented
Boxes (Paper)	Well represented
(Corrugated)	Well represented
(Wooden)	Well represented
Barrels (Wooden)	Represented
Brass	Unrepresented
Buttons	Unrepresented
Cans (Paper - Metal Ends)	Well represented
(Tin - Packers')	* Unrepresented
Casein	Unrepresented
Chamois Linings	Well represented
Charcoal	Unrepresented
Clay (Bentonite)	Represented
Dextrine	Unrepresented
Cotton (Fabrics)	Unrepresented
Dyeing, Finishing and Shrinking Cloth	Unrepresented
Dyes	Unrepresented
Electrodes (Carbon and Graphite)	Unrepresented
Gases (Compressed)	Well represented
Explosives	Represented
Fabrics (Coated and Impregnated)	Unrepresented
Fasteners (Zipper and Other)	Unrepresented
Felt	Unrepresented
(For Paper and Pulp Making)	Unrepresented
(Shoe and Insole)	Unrepresented
Fillers and Flats Egg Case	Well represented
Flax Fibre	Represented

Fur Dressing and Dyeing	Well represented
Fur Trimming	Well represented
Glass (Pressed and Blown)	Unrepresented
Glue (Bone,Hide,Fish,Vegetable)	Unrepresented
Glucose and Dextrose	* Unrepresented
Gluten	* Unrepresented
Hair (Animal)	Represented
Handles (Broom and Mop)	Unrepresented
Hardware (Furniture)	Unrepresented
Iron (Pig)	Unrepresented
Jute and Cotton Yarn	Unrepresented
Labels (Paper)	Well represented
(Fabric)	Unrepresented
Leather, (Bag, Garment, Pocket-Book, Trunk)	Represented
(Harness)	Represented
(Upper)	* Represented
(Sole)	Unrepresented
Malt	Well represented
Oil (Corn)	Unrepresented
(Cottonseed)	Unrepresented
(Linseed)	Well represented
(Soyabean)	Unrepresented
(Sunflower)	Represented
(Fish)	Represented (Slightly)
(Fuel)	Represented
(Lubricating)	Represented
Paper (Newsprint)	Represented
Plywood	Unrepresented
Refractories	Unrepresented

Rods and Bars (Bronze and Aluminium)	Unrepresented
Rods (Copper Wire)	Unrepresented
Sheets (Corrugated Iron)	Unrepresented
(Tin Mill, Black Plate, Galvanized, etc.)	Unrepresented
Silk (Broad)	Unrepresented
Smelter and Refining Products (Copper and Zinc)	Well represented
Starch (Corn - Edible)	Unrepresented
(Corn - Laundry)	Unrepresented
(Flour and Potato)	Unrepresented
Stockinette	Represented
Tire and Tubes	Unrepresented
Tubing (Steel)	Unrepresented
Veneer	Unrepresented
Wire (Galvanized)	Unrepresented
Yarn (Cotton)	Unrepresented
(Woollen)	Unrepresented
(Rayon)	Unrepresented
(Mixed - Other)	Unrepresented
Building Materials	
Air Conditioning Equipment	Represented
Asphalt	Represented
Boilers (Heating)	Represented
Bricks (Clay)	Represented
Bricks (Sand, Lime)	Represented
Building Block (Concrete)	* Represented
Cement (Portland)	Well represented
Concrete (Ready-Mixed)	Represented
Conduit (Electrical)	* Unrepresented

Conduit (Fittings)	Unrepresented
Fixtures (Electrical)	Unrepresented
Flooring (Hardwood)	Unrepresented
Furnaces (Hot Air)	Represented
Furnaces (Steel and Cast Iron)	Represented
Fuses and Fuse Wire	Unrepresented
Granite (Cut)	Represented
Hardware (Builders')	Unrepresented
Heaters (Water Tank, Electric)	Represented
Insulation (Wood, Wool)	Represented
Insulation (Rock Wool)	* Unrepresented
Lime	Well represented
Lumber (Planed)	Well represented
Nails	Unrepresented
Paints (Mixed)	* Represented
(Cold Water)	Represented
Paper, (Building)	Well represented
Paper (Wall Board)	Well represented
Plumbers' Supplies	Unrepresented
Radiators (Heating)	Represented
Sash (Door and Millwork)	Well represented
Sash (Steel and Brass)	Represented
Stokers (Mechanical)	Well represented
Stone	Well represented
Tile	Represented
Wall Board (Gypsum)	Well represented
General Materials	
Coke (Gas, House)	Represented
Gas	Represented

Grease	Represented
Wiping Cloths	Represented
Wood Preservation	Represented

Industrial Equipment

Farming Equipment

Agricultural Implements and Parts	* Represented
Binders (Grain and Corn)	Unrepresented
Carriage and Wagon Bodies and Boxes	Represented
Cream Separators	Unrepresented
Cultivators	Unrepresented
Diggers (Potato)	Unrepresented
Discs	Unrepresented
Drills (Grain)	Unrepresented
Fanning Mills	Represented
Fences (Electrical, and Equipment)	Unrepresented
Fencing (Wire)	Unrepresented
Grinding Machines	Represented
Halters	Represented
Harness	Represented
Harvesters (Combines)	Unrepresented
Harrows	Represented
Harrow Teeth	Represented
Hay Loaders	Unrepresented
Hay Rakes	Unrepresented
Hoes (Hand)	Unrepresented
Lighting Systems	Represented
Mowers (Hay)	Unrepresented
Ploughs	Unrepresented
Tanks (Water)	Represented

Threshing Machines	Unrepresented
Wire (Barbed)	Unrepresented
Manufacturing Equipment	
Heating and Ventilating Equipment	Represented
Instruments (Controlling and Recording)	Unrepresented
Lathes (Metal)	Unrepresented
Lathes (Woodworking)	Unrepresented
Machines	
Baking	Represented
Bottling	Unrepresented
Canning	Unrepresented
Cheese (Factory)	Unrepresented
Dairy	Unrepresented
Flour Mill	Represented
Laundry	Represented
Milking	Unrepresented
Pulp and Paper	Unrepresented
Road	Represented
Motors A.C. and D.C.	Unrepresented
Screw	Unrepresented
Trading Equipment	
Fixtures - Display	Represented
Refrigerators (Commercial)	Represented
Registers (Cash)	Unrepresented
Registers (Measuring)	Unrepresented
Scales	Unrepresented
Signs (Neon and Other)	Represented

Service Equipment

Hoists (Car)	Represented
Machinery (Laundry and Dry Cleaning)	Represented
Pumps (Gasoline)	Represented
(Grease)	Represented
Service Station Equipment (Other)	Represented
Tanks (Gasoline)	Represented
(Oil)	Represented

Light, Heat and Power

Batteries (Lighting Plants)	Represented
Electrical Instruments and Meters	Unrepresented
Engines and Turbines	Unrepresented
Generators (A.C. and D.C.)	Unrepresented
Hardware (Pole-line)	* Represented
Insulators (Porcelain)	Unrepresented
Junction Boxes and Distribution Centres	Represented
Lighting and Power Panel Boards	Represented
Lighting and Power Switch Boards	Represented
Switches (Power)	Represented
Transformers	(a)
Transmission Towers	Represented
Wire and Cable (Electrical)	Unrepresented

(a) A company now organized for production.

Miscellaneous

Accounting and Calculating Machines	Unrepresented
Batteries (Auto)	Represented
Batteries (Dry Cell)	Well represented
Brushes (Industrial)	Well represented
Castings	Well represented
Coke, Gas	Well represented
Compressors (Air)	Represented
Cones (Ice-Cream)	Represented
Coverings (Boiler and Pipe)	Unrepresented
Covers (Radiator and Seat)	Well represented
Crayons (Chalk)	Unrepresented
Cups (Paper Drinking)	Unrepresented
Dentists' Equipment	Unrepresented
Disinfectants	Represented
Dyes	Unrepresented
Fans (Electric)	Unrepresented
Fencing (Snow)	Represented
Films (Photographers)	Unrepresented
Fire Extinguishers	Represented
Fire Fighting and Protection Equipment	Unrepresented
Fishing Nets	Unrepresented
Food (Dog Canned)	Unrepresented
Furniture (Office)	Unrepresented
Gas (Coal)	Represented
Gasoline	Well represented
Glass (Window and Plate)	Unrepresented
Glass (Bottles and Jars)	Unrepresented
Grease	Represented

Grinding Balls	Represented
Heaters (Auto)	Represented
Hose (Rubber)	Unrepresented
Hydrants	Represented
Ink (Writing)	Represented
Insecticides	Represented
Lamps and Lanterns	Unrepresented
Lighters (Cigarette)	Represented
Machinery	Represented
Matches	Unrepresented
Meters (Water)	Unrepresented
Mowers (Lawn)	Unrepresented
Mucilage	Represented
Napkins (Paper)	Represented
Plant and Tank Work (Steel)	Represented
Photo Engraving	Represented
Pumps (Wood)	Well represented
Radiators (Auto)	Represented
Rubber Goods	Unrepresented
Saws and Saw Parts	Unrepresented
Stampings (Metal)	Unrepresented
Steel Shapes (Erected)	Well represented
Tacks (Cut and Wire)	Unrepresented
Telephone Equipment	Unrepresented
Tools (Carpenters' and Mechanics')	Unrepresented
Trunks	Represented
Typewriters	Unrepresented
Valves	Represented
Weed Killer	Represented

Welding Apparatus

Unrepresented

Wiping Cloths

Represented

Wire Rope and Cable

Unrepresented

Wood Preservation

Represented

WAR PLANTS (GOVERNMENT-OWNED)

War Plants (Government-Owned)

In the course of this Survey special attention has been directed to the possibilities of post-war utilization of the aircraft plant operated for the Government by Macdonald Bros. Aircraft Limited, and the Transcona cordite plant. The former has already been largely converted to peace-time industry.

The cordite plant erected at Transcona, Manitoba, by Defence Industries Limited for the Department of Munitions and Supply, is located just east of Transcona and some nine miles from the centre of Winnipeg. The plant was Government-owned and was erected in 1940 - 1941 and operated from July 1941 to the Spring of 1945.

As planned, it was a self-contained plant with facilities for the production of nitric acid, nitroglycerine, guncotton and incorporation of these ingredients into finished cordite. There were also the usual acid recovery plants and other ancillary plants necessary for efficient explosives production.

The plant was built as part of the overall explosives programme and was one of four explosive plants, the others being located at Nobel, Ontario, Valleyfield, Que., and Shawinigan Falls, Que. All these plants present the same general industrial opportunities and disabilities. In addition there were three large ammunition filling plants having the same general characteristics of design essential to the handling of large quantities of explosives.

The plant site involves an area of some 730 acres with manufacturing buildings, magazines, storages, etc., widely spread over the whole area for reasons of safety. With the exception of the power house and some other special buildings, construction was

of a temporary nature involving, in the main, frame buildings on posts.

The location some nine miles from the centre of Winnipeg has the advantage of being sufficiently remote from a large centre of population to make it suitable for an industry which, for nuisance reasons, such as odours, dust, gases, etc., might be unsuitable for more populous areas. Conversely, for much industry the location is a disadvantage.

Industries for which the site would seem particularly desirable are those such as smelting, metal refining, oil refining, cement, pulp and paper, and heavy chemicals.

Sewage disposal facilities, which comprise an open ditch system to the river, would, however, appear unsatisfactory for industry with obnoxious effluents.

The possibilities of the site for a pulp mill operation with a capacity of 50 tons per day utilizing poplar or straw have been studied. Poplar supply appears ample and cost of wood laid down at Transcona at present prices compares favourably with wood costs at mills in Ontario utilizing poplar. The supply of straw would also seem ample but it appears doubtful if straw could compete favourably with wood in the production of pulp. Advantages offered by the facilities at the site are, however, probably outweighed by more advantageous factors at other locations.

The site also offers possibilities for the establishment of a public institution such as an industrial home or school, agricultural experimental station, penal institution, etc.

Since our first examination of this situation and due to the urgent demands of industry in general, much of the heavy equipment has been dismantled and sold through War Assets Corporation and

a number of the buildings salvaged.

In reviewing the problem at the present time, we would point out that no industrial use has been found for similar plants in Eastern Canada. We would also point out that no post-war industrial use was found for explosive plants built during the 1914 - 1918 war period.

* * * * *

January 1947.

